THE

Malayan Agricultural Journal.

SEPTEMBER, 1934.

EDITORIAL.

Vegetable Oils in Malaya.

Vegetable oils are an important factor not only in the welfare of the agricultural industries of Malaya, but in the domestic life of its inhabitants. The very serious decline in market prices of oils has affected a large proportion of our rural population. Recent political developments, having as their object the restriction and re-orientation of markets, have further complicated the position and have made necessary a close examination of the situation as it affects producers in Malaya.

The Malayan Committee appointed " to investigate and report on the present economic condition of the coconut and other vegetable oil-producing industries and to make recommendations " was therefore set a task of some magnitude, and its report, the publication of which is commendably prompt, is evidence of the very close study which its members gave to every aspect of the situation and the consideration of every factor which might be used to alleviate the very real distress in these industries.

The problems facing the producer of vegetable oils in Malaya are not peculiar to this country; they are the problems which face every country in which oil production is of importance. The views of this Committee, therefore, are of more than local interest and in order that our numerous readers overseas may be made conversant with the contents of a Report which is probably not easily accessible outside Malaya, we have devoted considerable space in this number to an abstract of the Report in question. This has rendered it necessary to omit certain regular features of *The Malayan Agricultural Journal*, an omission which we regret.

The imports of vegetable oils and oil seeds into Malaya in 1933 amounted to approximately 147,000 tons, valued at $11,000,000, and the exports to nearly 270,000 tons, valued at over $20,000,000. It must be remembered that in that year, although volume of production was maintained, the value was much below average.

The Committee deals with the subject in three main portions, *viz.* the coconut industry; the oil palm industry; other vegetable oil industries. The seriousness of the present economic position of the major of these industries is epitomised in the Report in the following words:—

> " It will be seen that the present position of all coconut producers is extremely difficult and precarious; it is comparable with that of rubber growers during the rubber slump and deserves very sympathetic treatment."

The Report reviews the general world situation respecting each of the important vegetable oils, deals more fully with the Malayan industry and examines the various means by which the present position might be alleviated and the future welfare assured. The recommendations, therefore, fall naturally into two groups; either they are concerned with temporary relief, or they suggest means whereby the future of the industry may be stabilised. In the former group are, for instance, recommendations for relief in rent, rates, export duties; in the latter are suggestions for impovement of the product, organisation amongst producers, extending markets.

The Report perhaps suffers from the very multiplicity of suggestions for improvements; the application of some will admittedly not go far towards the relief of producers, others may be to the benefit of the producer but to the detriment of the local consumer.

This method of treatment may make it somewhat difficult for the reader to decide upon which points the Committee desires to lay emphasis. It has the advantage, however, of giving the Report a wider appeal, for the points which may be of minor importance in one part of the Empire may possibly prove of greater value in another Colony.

The most important recommendations made concerning the local coconut industry are prohibition of further planting of coconuts, Empire preference and protection, substitution of coconut oil for other imported oils, and the better organisation of the industry. While any temporary alleviation such as may be given by reduction of rent would be much appreciated by producers, we believe that it will contribute but little to recovery without the inauguration of a closer organisation of producers. The Committee suggests the formation of a local branch of the Copra Producers' Organisation, and indicates many lines of investigation which should be the function of such a body. This seems to us a necessary provision if the industry is to expect assistance in any form either from Government or from other important bodies. The industry cannot expect material outside help if it is without organisation, and is unable to voice its opinions or represent its case as a concerted body. The fact seems fairly well established that the local market might absorb a much larger quantity of coconut products, and other markets might be developed if there was a " live " organisation of producers whose duty it would be, not only to protect the interests of coconut producers, but to develop the industry on up-to-date lines.

In relation to the oil palm industry, the Committee has less to say regarding methods of relief. It is of opinion that, owing to its excellent organisation, this industry is probably in a better position to weather the difficult situation than is the coconut industry. Suggestions are made, however, to effect some measure of relief.

Other vegetable oils receive the consideration of the Committee; in particular, groundnuts, gingelly and soya beans. These are of importance to Malaya, not because they are extensively grown locally, but because they are imported in considerable quantities and used for purposes for which locally produced coconut and palm oil might be substituted.

The Committee does not recommend restriction of production of either coconut or oil palm products, but does urge the curtailment of planting of new areas. In view of the fact that it is unlikely that important planting interests will be attracted to coconut planting and that restricted planting is to be allowed to small-holders (who are the most important producers,) it appears to us unlikely that the acceptance of this recommendation will have any material favourable effect on the situation, although it would appear to be advisable to create a safeguard against the possibility of any extensive planting in the next few years. In the case of oil palms a somewhat similar recommendation is made. Here, the small-holder is not concerned—he does not plant oil palms. The Committee suggests that there should be no further alienation of land by Government for oil palm cultivation, but that reserve land already alienated for the crop may be planted up. The total planted area in Malaya is about 64,000 acres, and unplanted reserves 47,000 acres. It is possible, therefore, that the planted area may be increased materially, after which available capital for this form of cultivation would be deviated from Malaya to other suitable countries in which there is no such restriction. It is unlikely, therefore, that restriction of planting will have any material effect on world production.

The report states:

> "The immediate outlook for the industries concerned is likely to be extremely difficult for some time to come; there appears to be little likelihood of an early recovery in prices, although in a situation so complex, the possibility of recovery and of expansion in the consumption of certain by-products must not be overlooked. So far as can be seen, however, recovery is more likely to take place by the elimination or reduction of certain sources of supply, while it is within the bounds of possibility that the position may become worse before improvement sets in.
>
> "It is conceivable, however, that some degree of regulation of further planting might be feasible, combined with some system of Imperial and International agreement for the admission on a quota basis of various oils and fats into consuming countries. In any event, it seems probable that only the most efficient and the cheapest producers are likely to survive under present conditions."

The keynote of future action is contained in the last sentence, and we suggest that readers should examine the report with this warning foremost in their minds.

THE PRESENT ECONOMIC CONDITION OF THE COCONUT AND OTHER OIL-PRODUCING INDUSTRIES.*

The General Situation of the Oils and Fats Industries.

The present disasterous fall in prices is the result of a combination of factors affecting a number of related industries; these factors cover a wide range of geographical and climatic conditions. The products concerned comprise not only coconut, palm and palm kernel oils, but also whale oil, soya bean oil, cotton seed oil, groundnut oil, olive oil and tallow, together with a number of other oils of lesser importance; the production of dairy butter and lard also has an important bearing on the situation.

All these oils are extensively used in the manufacture of margarine, lard substitutes, and cooking and edible oils; they are also employed in the manufacture of soap and toilet preparations, and on the condition of these industries the market for them depends. Moreover, margarine and lard substitutes enter into competition with butter and lard, so that any marked increase of production and corresponding decrease of price in the case of the latter will lead to decreased consumption of the substitute products, because domestic consumers prefer the genuine article provided it is within their means.

Owing to scientific advances it is now frequently possible to substitute one oil for another in manufacturing processes. Consequently, manufacturers have a wide range of choice in their raw materials and are able to take advantage of marked lowering in price of any of the more important vegetable or animal oils and fats by changing their formulae and their purchases to suit market conditions. It is seen, therefore, that the raw materials are closely interconnected, and over-production of any one may seriously affect consumption in any other, or all of the others.

There has been greatly increased production in practically all of these raw materials, and in several there is serious over-production. It seems not improbable that the total surplus may approximate to about one year's normal consumption.

Over-production dates back to the years succeeding the War, when prices for vegetable oils and fats rose to unprecedented figures. Consequently, all branches of the edible oil industry apparently offered attractive openings for capital and great expansion of the areas planted under oil crops therefore followed. Concurrently, increased capital was introduced into certain industries, notably the whaling and the soya bean industries, resulting in greatly increased supplies of these oils being placed on the world's markets.

* The following is an Abstract of the Report of the Vegetable Oil Committee appointed by H.E. The Governor of the Straits Settlements and High Commissioner for the Malay States on 21st April, 1934, and under the Chairmanship of Dr. H. A. Tempany, C.B.E., Director of Agriculture, Federated Malay States and Straits Settlements. The terms of reference were :—"To investigate and report on the present economic condition of the coconut and other vegetable oil-producing industries and to make recommendations."

On the other hand, there has been a steady decline in the consumption of margarine and probably, to a less extent, of soap. This has been accompanied by a steady increase in the production of butter which is now coming on to the world market in large quantities at prices which compete with margarine.

A further factor which has profoundly influenced the situation is general instability coupled with lessened purchasing power.

The present world-wide move towards economic nationalism has also considerably affected the position. As a result of the latter, Governments all over the world are vying with one another in fostering the production of such oils and fats as can be produced within their own boundaries. As a part of the campaign, higher and higher tariff barriers are being erected against foreign produce, quota systems are being introduced and in some cases, complete prohibition of the entry of certain fats has also been effected.

In the British Empire, under the Ottawa agreements and the British Import Duties Act of 1932, coconut, palm oil and kernels obtain a preference varying in different countries, which in the Report are set forth in some detail.

In France, vegetable oil imports are subject to a quota restriction; in Germany the importation of oils and fats is a Government monopoly and the imports allowed were nominally reduced in 1933 to 50 per cent. of imports in 1932. Quota restrictions on the importations of certain vegetable oils, including coconut oil, are also in force in Italy, Spain, Switzerland, Denmark, Czecho-Slovakia and Austria.

The position in the United States is the most disturbing of all, inasmuch as from 11th May, 1934, a processing tax has been imposed which has the effect of raising the duty by 3 cents a pound on imported foreign coconut and palm oils, the total duty becoming 5 cents per lb. on coconut oil and 3 cents per lb. on palm oil, *i.e.* £22.4.0 per ton on coconut oil and £13.9.0 per ton on palm oil (copra being taxed proportionately to its oil content).

The immediate outlook for the oil-producing industries is likely to be extremely difficult for some time to come; there appears to be little likelihood of an early recovery in prices, although in a situation so complex, the possibility of recovery and of expansion in the consumption of certain by-products must not be overlooked. So far as can be seen, however, recovery is more likely to take place by the elimination or reduction of certain sources of supply; it is also possible that the position may become worse before improvement sets in.

The remedy of artificial restriction of production is obviously inapplicable to the relief of the coconut and palm oil industries. Apart altogether from special difficulties in relation to these industries which would be formidable, if not insuperable, owing to the large proportion of native producers and the geographical distribution of these crops, it would also be necessary for effective control to regulate the output of all related oils and fats. Unless this could be achieved, limitation of production in the case of one or two products would merely lead to increased production of others.

It is conceivable, however, that some degree of regulation of further planting might be feasible, combined with some system of Imperial and International agreement for the admission on a quota basis of various oils and fats into consuming countries. In any event, it seems probable that only the most efficient and the cheapest producers are likely to survive under present conditions.

The Uses of Coconut Oil, Palm Oil and Palm Kernel Oil.

Coconut oil and palm kernel oil are principally used for the manufacture of margarine and soap, while glycerine is an important by-product. In the United States, prior to the imposition of the new processing tax, from 55 to 60 per cent. of the total consumption of these oils entered into soap, 25 to 30 per cent. into margarine and from 10 to 15 per cent. into other food.

Palm oil is used mainly in soap making, but an important addition is its use as a flux in the manufacture of tin plate, for which purpose nearly 7,000 tons were consumed annually in the United States. It is also used to a minor degree in margarine making.

Coconut oil is used in the margarine industry as a principal ingredient of vegetable oil margarine and no other oil which has been tried on a commercial scale has proved as satisfactory in making this type of margarine. In the United States, vegetable oil margarine is practically exclusively manufactured; elsewhere than in the United States, however, vegetable oils used in margarine manufacture have suffered from the severe competition of whale oil since, in Europe, hardened and refined whale oil is a major constituent of margarine.

Whale oil production is now in the region of 350,000 tons per annum. The increase is due primarily to the exploitation of the Antarctic waters and to modern methods of whale catching. Norway produces about half the world supply of whale oil, and Great Britain and British Possessions produce the next largest quantity.

The production of soya bean oil has also greatly increased of recent years and it has become a serious competitor with coconut oil in margarine making in Europe. The chief supplies are derived from Manchuria.

Before the art of refining, deodorising and hardening oils was as well understood as at present, some difficulty was experienced in utilising whale and soya bean oils, but now, taste and smell can be completely removed and a hard fat can be obtained.

The Coconut Industry.

The world acreage under coconuts is not accurately known, but a fairly reliable estimate in 1930 placed the area at about 7¼ million acres, as compared with 5½ million acres in 1921. British Empire countries account for slightly more than half the world acreage. Some part of the new acreage has not yet come into bearing, while other areas are not yet in full bearing; hence, the supply of coconut products should tend to increase for some years to come. The bulk of the production is in the hands of small-holders; large coconut estates prob-

ably do not account for more than 10 per cent. of the total. The world production of coconuts, in terms of copra, may be estimated at about 3 million tons. In 1929, the peak year, aggregate exports from producing areas in terms of copra amounted to only 1.7 million tons or under 60 per cent. of the estimated total production. It therefore appears that over 40 per cent. of the total production is consumed in the countries of origin.

The principal products of the industry are copra, coconut oil, fresh nuts, shredded and desiccated coconut together with coconut cake and meal, coir, arrack, toddy and shell by-products. Of these products, copra is, by far, the most important, although in recent years the manufacture of coconut oil in countries of production has increased considerably.

The net exports of copra from the principal producing countries in 1930 were 1,033,000 tons, of which over 401,000 tons were from the British Empire. The net exports of coconut oil in 1933 are estimated at 230,000 tons, of which 70,000 tons were derived from the British Empire.

Of the total world supply of copra in 1930, 35.7 per cent. was from Netherlands India, 15.1 per cent. from the British Southsea Islands, 16.5 per cent. from the Philippine Islands, 9.8 per cent. from Malaya, 8.7 per cent. from Ceylon, and 14.2 per cent. from various other sources. Of coconut oil exports, 73.6 per cent. was from the Philippine Islands, 21.8 per cent. from Ceylon and 4.5 per cent. from Malaya.

Although half the total area of coconuts is in the British Empire, Empire produce only comprises about one-third of the total exports from producing countries. This is due to the fact that India, which possesses the largest area under the crop, now exports no coconut products, and since 1914 has been an importing country.

Distribution of World Supplies among the Consuming Countries.

The principal copra importing countries in 1933 were :—United States of America 295,032 tons, France 196,644 tons, Germany 121,181 tons, United Kingdom 102,095 tons.

Before the War, Germany was the principal importer of copra with France, second. Since the War, however, the United States has been, by far, the largest importer, while the United Kingdom has also largely increased its imports of copra in recent years. In addition to imports of copra for crushing, a number of countries import coconut oil both from copra-producing areas and also from copra-crushing countries outside these areas.

Market Prices for Copra and Coconut Oil.

The price of copra both before the War and in the earlier years of the War was subject to substantial fluctuation; between January, 1911 and July, 1914, the average monthly price c.i.f. London for fair merchantable sundried Singapore copra lay between £21.2.6 and £31.2.9. During the War, prices rose to £45.15.0 in November, 1917. No further change occurred until after the

War, as prices of oil seeds were regulated until March, 1919, when the control was removed and the price fell to £33.10.0 Thereafter, the price again rapidly rose, the peak being reached in February, 1920, with an average of £69.10.0 per ton. Thereafter, the price sagged, until at the present time the lowest level recorded has been reached at £9.10.0 per ton. Prices for coconut oil have followed a somewhat similar course.

Characteristics of Copra and Coconut Oil.

The quality of copra varies considerably according to the degree of care exercised in its preparation. Well-prepared copra is white, of low moisture content and hard; it should be free from dirt, moulds and smoke and should contain from 4 to 6 per cent. of moisture and not less than 65 per cent. of oil. Well-prepared copra is less liable to mould attack and insect attack than low grade copra; the presence of excessive moisture conduces to the growth of mould which, in turn, favours the attack of insects, both leading to material loss in weight in transit, not attributable to moisture loss alone.

Generally, copra is classified according to its country of origin and is graded into two qualities. The higher quality is known as f.m.s. (fair merchantable sundried) although the term "sundried" does not necessarily describe the method of preparation—and is used as a trade description—and f.m. (fair merchantable).

The recognised order of merit of copra produced by various countries is shewn in a table. The first ten places are for the f.m.s. grade from Malabar (f.m.g.w.s.)*, Ceylon, Seychelles, Mauritius, West Indies, West Africa, Java, Straits, Dutch Indies, Samoa (Plantation). Ceylon f.m.s. commands a premium of 5 per cent. over Straits; Straits f.m.s. 15 per cent. over Southseas f.m.s., and 17 per cent. over Philippine f.m.s.; Straits Sundried commands 21 per cent. premium over Straits Mixed.

Copra is employed exclusively for the manufacture of coconut oil, the quality of which depends on the quality of the copra crushed. Good copra produces an oil with a minimum amount of free fatty acid, suitable, when refined, for edible purposes, whereas oil expressed from lower grade copra is mostly used for soap making.

The highest grade of copra was formerly that coming from the Malabar coast of India, but this is now consumed in the country of origin. The second place is held by Ceylon copra, but this is also coming on the markets in decreasing quantities, largely owing to the fact that India appears to be taking more and more of the Ceylon supplies.

Straits f.m.s. copra formerly ranked above copra from Netherlands India, but during the past two years the position has become reversed and f.m.s. Java copra is now graded higher than Straits copra. Southsea Islands copra, which is one of the largest sources of supply, is definitely of low grade.

The general indications are that, in the existing depressed condition of the market, the demand for high grade copra is increasing.

*"Fair merchantable good white sundried". The term "sundried" and "kiln-dried" are terms of quality and do not necessarily indicate the method of manufacture.

Owing to the price grouping of copra according to the country of origin, it is difficult for any improvements in market quality effected by producers to meet with an immediate response of an enhanced price; this is said to be due to the fact that little interest is taken by buyers in individual consignments, although cases exist where estates, which have established a reputation for turning out high quality copra, can command a steady premium for their produce. On the other hand, a general upgrading of the quality of copra shipped from any country seems likely, in the long run, to meet with a better market demand.

Concerning the future outlook of the market, it seems problematic whether, at prevailing low prices, shippers can possibly maintain the present high rate of exports. Many estates unfavourably situated as regards cost of transport can only work at a loss and it is therefore doubtful whether they will continue to collect the nuts under present circumstances.

For the time being, it may be expected that the Philippine producers will continue to compete for the European business, but the possibility is not excluded that the present record crop may be followed by a smaller production next season.

As will be observed, there is unfortunately no improvement in sight in the price of copra. As for other oilseeds, visible supplies are plentiful, and with the existing low price of butter, the value of edible fats can hardly improve to any considerable extent. Therefore, it will only be a general improvement in world trade conditions, or an automatic drop in copra shipments, which can lead to higher prices for this article.

The Malayan Position.

In Malaya, coconuts are cultivated mainly in the neighbourhood of the sea coast and in particular on the west coast; moderately extensive native-owned plantations, however, occur along the banks of some of the larger rivers.

On the west coast and in the inland areas, the crop is usually cultivated on heavy clay soils, offering a marked difference in this respect from the majority of countries in which coconuts are grown. On the east coast, however, cultivation is on sandy soils. Various attempts have been made to grow coconuts on the peaty soils which occur at certain points, but, on the whole, the results have been unfavourable.

The area planted with coconuts in Malaya is estimated at approximately 637,000 acres, of which 315,000 acres are in the Unfederated Malay States, 240,000 acres in the Federated Malay States and 82,000 acres in the Straits Settlements.

Small holdings occupy a total area of approximately 500,000 acres; it is estimated that there are about 300,000 such holdings, the average size being 1.7 acres. Of the total area 1/7th represents immature areas.

Estate cultivation is mainly confined to the Federated Malay States and the Straits Settlements, the total area being about 125,000 acres. There are 165

coconut estates in Malaya of an average size of 670 acres, of which 37 are over 1,000 acres in extent.

The products of the industry comprise fresh nuts, copra and coconut oil together with a certain amount of toddy. There is at present little production of coconut coir or charcoal. The total production is, to a certain extent, a matter of conjecture, as a considerable proportion of the produce is consumed locally and of this quantity no records exist. It has, however, been estimated that the total average production for Malaya, in terms of copra, is 5.5 piculs (1 picul = 133⅓ lbs.) per acre, estates producing 10 piculs per acre and small holdings 4.6 piculs per acre. The Ceylon average has been estimated to be 8 piculs per acre.

In Malaya, it is not the practice to apply fertilisers to coconuts. Extensive and thorough drainage and careful sea-bunding are necessary if coconuts are to do well and this may be regarded as offsetting the saving at present effected in manuring.

The net exports of coconut products from Malaya in 1933 were approximately 9,000 tons fresh coconuts, 110,500 tons of copra, and 17,500 tons coconut oil—to the total value of over 11½ million dollars. The peak year was 1926, when the value of net exports of coconut amounted to over 25 million dollars.

The production of coconut oil has steadily increased of recent years, it is manufactured in 11 factories besides production as a cottage industry.

There is also a considerable entrepôt trade at Singapore and Penang in copra imported from Netherlands India and re-exported.

Of a total gross export of 210,585 tons of copra in 1933, 49,633 tons went to the United Kingdom, 17,618 tons to the United States of America, and 139,545 tons to European countries.

Estimated Capital Value of the Industry.

The capital value of the industry at the present time is estimated to be :— estates $50,000,000; small holdings $120,000,000 It appears that the sale value of small holdings has been halved since 1929. At present values of produce, the turnover of the industry is estimated to be :—estates $3,250,000; small holdings $4,500,000. In the year 1929, the annual turnover was estimated to be $27,000,000.

The f.o.b. cost of production in 1933 was $2.90 per picul as compared with $5.80 in 1929 (41 per cent. of this is represented by labourers' wages). Under emergency conditions in 1934, production with maximum efficiency gave an average anticipated f.o.b. cost of $3.30 per picul, reduced efficiency $2.75 and utmost economy $2.30 per picul.

Conditions on Small Holdings.

It is impossible to arrive at a similar estimate of costs of production on small holdings. In certain districts, where the holdings consist almost entirely of coconuts, severe poverty prevails. Wherever small-holders possess additional

resources, such as rice or rubber land, conditions are considerably better. The position constitutes a demonstration of the truth of the assertion that, in the case of a small-holder, dependence on pure stands of any one crop is a very insecure basis of livelihood.

Practically everywhere, small-holders are heavily in debt. It is usually most pronounced in the areas which have been longest settled. For the most part, these debts were contracted in time of higher prices. Under the present condition of affairs, there seems little hope of the majority of the small-holders ever being able to settle these debts in full.

Many of the lands have already been leased and in a few cases, especially where young coconut areas are concerned, the owners have abandoned their land. It is difficult to see anything, save a very sharp rise in the price of produce, of which there appears to be little prospect, which could markedly alleviate their difficulties.

The question is bound up with the general problem of rural indebtedness which is outside the terms of reference of the Committee.

In any event, it is important that these people should not be dispossessed of their lands and their crops; it is also important that desirable immigrant Malay population should be retained and re-emigration prevented so far as possible. In these circumstances, lenient treatment is indicated and dispossession of small-holders for non-payment of rent should only occur in the last resort.

The present position of all coconut producers is extremely difficult and precarious; it is comparable with that of rubber growers during the rubber slump and deserves very sympathetic treatment.

While no general control of output is applicable to the coconut industry in Malaya, yet low prices for oils and fats must in due course bring about natural restriction of output.

It is suggested that the present difficulties are largely the result of the uncontrolled introduction of capital into the oils and fats industries.

Prohibition of Further Planting of Coconuts.

It is recommended that no further alienations of large blocks of land for coconut planting should be made. Owing to the important part which coconuts play in the economy of the small-holder, such prohibition should not apply to small holdings, but in future alienation of land to small-holders, it should be stipulated that not more than 1/5th of the total area shall be planted in coconuts.

Empire Preference and Protection.

The principal markets have hitherto been on the Continent of Europe and in the United States of America. Restrictions on imports in the former area and the heavy processing tax recently introduced in America, hamper and restrict trade in copra. The American legislation may divert a large part of the enormous Philippine supplies to European and other markets.

Of the total world exports, about 40 per cent. is derived from the British Empire. In view of this fact, it is suggested that representations be made asking for preference and protection of Empire copra and coconut oil against the three serious competitors of coconut oil, which are wholly or in considerable part produced from foreign sources of supply, namely : soya beans, whale oil and cotton seed, which are at present admitted to the United Kingdom duty free.

It is suggested that the Imperial Government might consider the possibility of requiring that a fixed minimum percentage of coconut oil must be included in margarine produced and/or sold in the United Kingdom. Further, it is suggested that the Imperial Government should be invited to negotiate for the inclusion of British Empire coconut oil in the quotas for importation of vegetable oils and fats which have been established in various countries.

Expanding Malayan Foreign Trade.

India.—India is now a large importer of coconut oil and fresh coconuts. Exports from the Malabar Coast, which were at one time considerable, ceased in 1927. Ceylon exports to India have increased from 6,000 tons copra equivalent in 1929 to 54,000 tons in 1933. Malayan coconut oil exports to India have increased from 1,500 tons in 1932 to 7,200 tons in 1933. It is suggested that Malaya should endeavour to obtain an increased share of this market and should emulate the Ceylon plan of judicious advertising and investigation with this end in view. The fresh nut trade has been affected by an Indian tariff which places Malayan nuts in the same category for duty as nuts from Netherlands India, while Ceylon nuts are admitted on more favourable terms. It is hoped that present negotiations with the Indian Government with a view to obtaining favourable treatment for Malayan nuts may be successful.

The possibilities of further extending the present Malayan trade in Burma, Siam, and the China Coast is discussed, while attention is drawn to the probable increased demand in the future from Russia.

Present Unorganised Malayan Coconut Industry.

The present position calls for better organisation of the local coconut industry. There is in the country no organised body which can claim to speak for the industry as a whole. It should be of advantage if an organisation, representative of the coconut interests of the Peninsula, could be formed. Such an organisation might be a branch of the Copra Producers' Association, which it is understood, is in process of formation in the United Kingdom.

Expanding Local Consumption of Coconut Products.

The amount of coconut oil consumed locally compares unfavourably with the quantities used in countries such as Ceylon. This is in part due to the presence here of nationalities accustomed to use other kinds of oil. It is

thought that an extended consumption of coconut oil might result from propaganda and advertisement. The problem of extending the local consumption of coconut products consists, in part, of inducing a population which is accustomed to one form of oil to substitute another for it. Modern methods of refining render it possible, without difficulty, to remove the odour and taste of coconut oil, while it may also be possible, by judicious blending or other treatment, to impart to coconut oil the flavour of other oils such as groundnut oil.

Import Duties on Oils and Fats in Malaya.

The position regarding import duties is difficult by reason of the Customs systems in Malaya. At present, with certain exceptions, all classes of goods are freely admitted into the Straits Settlements, while duties at various rates are charged on certain commodities entering the Federated Malay States and the various Unfederated Malay States. These duties take little account of affording specific assistance to local industries, and are in need of revision. In the existing scale of duties there is considerable divergence between States and there are a number of anomalies.

A large entrepôt trade in copra is centred chiefly in Singapore. The imports consist mainly of low-grade copra from Netherlands India. The bulk of this is re-exported, but a certain proportion is crushed in Singapore and enters into competition with oil produced from Malayan copra on the Malayan markets.

Imports of Philippine copra are likely to occur in the near future, and unless steps are taken to prevent it, it is probable that the local market will be flooded with oil produced from Philippine copra which cannot find an outlet elsewhere. Under present conditions, no action seems possible in so far as concerns the Straits Settlements, but the Committee sees no reason why the Government should not consider the revision of tariffs so as to afford some protection to locally-produced oils and fats.

It is therefore suggested that the Governments of the Malay States should impose duties on any oils and oil-bearing materials which could enter into competition with coconut oil and are not at present taxed, while they should also consider the possibility of raising their duties with a view to increasing the use of coconut oil prepared from Malayan copra.

It is recommended that an import duty on foreign coconut oil be made equivalent to that borne by other vegetable oils, but that all oil produced from copra made in the British Empire should be allowed free entry into the Malay States. This may lead to the establishment of new oil mills in the Malay States and favour the expansion of trade of existing mills.

Soap Making.—There is an increasing industry in the manufacture of soap in Malaya.

There is no import duty on soap in the Malay States. The imposition of such a duty is recommended with preference to British soap.

It is further recommended that a Standing Committee of officials be appointed for the purpose of watching the situation regarding imports, the effect of import duties and similar matters.

Coconut Sweet.—Coconut sweet, so common in other tropical countries, is hardly seen in Malaya, and coconut biscuits and cakes are not made to any great extent. It is suggested that a cookery book or pamphlet containing instruction for utilising coconuts in domestic cookery might be prepared for use in schools and for general circulation.

Desiccated Coconut.—The Committee considers that the feasibility of extending the production of desiccated coconut for domestic consumption should be investigated and remarks that on this point some experiment and investigation is required.

Fresh Nut Sale.—The possibility of increasing the local sale of fresh nuts is considerable. There is a big disparity in prices of nuts in coconut-producing districts and of those in market towns situated at no great distances from these sources of supply. Co-operative effort is suggested to organise the supply of fresh nuts throughout the country. The regular supply of nuts to estates outside coconut areas suggests itself.

Grading standards for fresh nuts are a present need. The Committee thinks that a system of grading based on size of nut is needed.

In passing, a Coconut Exhibition is suggested as a means of extending the consumption of coconut products.

Direct Assistance to the Industry.

The direct assistance by Government can take three forms.

1. *Reduction or remission of export duties on coconut products.*—Export duty on copra in the Federated Malay States is 1½ per cent. *ad valorem*, with an addition of 1 cent per picul for research: coconut oil is free. In Johore, until recently, copra paid either 2½ or 5 per cent. export duty according to conditions of tenure of land. In Kedah, the duty amounts to 2½ per cent. *ad valorem*; in Kelantan and Trengganu, the export duties are 3 per cent. and 5 per cent. respectively, *ad valorem*. There is no export duty in the Straits Settlements, but estates pay assessment which on the average works out at approximately $2 per acre per annum.

It is recommmended that export duties on coconut products should be waived until such time as the price rises to a more profitable level. (This waiver should not apply to the cess for research). Export duty has already been waived in Johore from 1st June 1934, with an estimated loss of revenue of $50,000 per annum. Similar action in the Federated Malay States would involve a loss of revenue of about $40,000 per annum. The loss of revenue in Kelantan and Trengganu would be negligible.

2. *Rents.*—Rents on coconut land vary somewhat in different States: the average however, appears to be from $1.50 to $2 per acre. The Committee recommends a temporary remission of part of the rent on coconut land. As

an alternative, the proposal is made to reduce rent to a maximum of $1 per acre per annum, or the reduction of all rents by 50 per cent. Unplanted reserves should be regarded as planted areas and should be required to pay the same rent.

3. *Drainage Rates.*—These rates vary according to the original cost of the work and the cost of maintenance. At present prices of copra, and in two typical cases, these drainage rates amount to about 10 per cent. of cost of production of copra on estates and to 15 per cent. of the cost of production of copra on small holdings.

The Committee recommends that drainage rates should be reduced to an amount which represents the expenditure on upkeep of the works and should not include, for the present, any capital charges.

These recommendations for relief are intended to be only in the nature of a temporary waiver until such time as recovery in the price of coconut products warrants a return to the rates previously in force. It is pointed out that, if the recommendations already made for increased duty on certain imported oils and fats are approved, the increased revenue may, to some extent, offset the losses.

The suggestion of an export subsidy on copra of first quality was considered by the Committee. The conclusion was reached that on principle it was unsound, and in practice, it would involve so many administrative difficulties that the Committee was unable to recommend it.

Relief in the Straits Settlements.

The Committee considered that the Government of the Straits Settlements should favourably consider a reduction in the assessment so as to afford an increase of relief equivalent to that which would be accorded to growers in the Malay States, if the foregoing recommendations are approved. It appears that the question of assessment of coconut small holdings in the Straits Settlements may stand in need of revision.

Malayan Copra.

Annual exports of copra from Malaya are about 200,000 tons of which nearly half consists of imports from Netherlands India, so that the nett annual export production from Malaya is about 110,000 tons of copra. A considerable additional amount is crushed in local oil mills for consumption locally or for export. In 1933, nett exports of copra were 110,588 tons and of coconut oil 17,568 tons, which in terms of copra is equivalent to about 30,000 tons. It is estimated that a similar amount of coconut oil is manufactured and consumed locally, so that in 1933 the total output of copra in Malaya may be estimated to have been about 170,000 tons.

Malayan copra is marketed in two grades "f.m.s." (fair merchantable sundried) and "f.m." (fair merchantable). These are export grades artificially created at the point of shipment, copra from all sources, both local and

imported, being picked over, re-sorted and re-graded for export. It follows that Malayan exports are not necessarily 100 per cent. Malayan production; they may be graded and blended with copra from foreign sources.

Copra as received from estates and local dealers is usually classed as either estate quality or mixed quality, the expression "sundried" being often loosely applied to indicate copra of superior quality.

While the prices realised for individual lots of copra sold to dealers in the coconut areas on the same day show wide variations, the daily market quotations for Singapore and Penang show a definite difference in prices for copra of f.m.s. and f.m. qualities. With the gradual fall in price which has taken place, the difference between the market value of f.m.s. and f.m. copra has tended to become greater.

In 1926, this difference amounted to 3.1 per cent. of the ruling price but for the first six months of 1934 the difference amounted to 18.9 per cent.

This may be taken to indicate that under existing conditions, when there is an increased surplus of vegetable oils, the tendency is to discriminate more in favour of good quality copra.

Attention has repeatedly been drawn to the steadily deteriorating quality of Malayan copra. In 1929, a scheme of research work towards the improvement of Malayan copra was undertaken by the Department of Agriculture. The scheme has been in operation for the past five years and much has been done to indicate the manner in which Malayan copra can be improved and to disseminate the information to estates and small holdings. It has been shewn that the improvement of the appearance of Malayan copra to a quality equal to that of the highest grades produced elsewhere is relatively easy. Practically all estates have taken steps to improve their methods of manufacture accordingly, and in many parts of the country marked improvement has also taken place in the quality of the small-holders' produce.

In spite of these local improvements, the reputation of Malayan copra on the world's markets shews no improvement.

The mixing of imported copra with the Malayan produce may have a depressing effect on the reputation of Malayan copra. In view of this fact and of the possibility of increased imports of low-grade copra from the Philippines, it is suggested that an investigation of the influence on the reputation of local copra of large importations of inferior copra might be undertaken.

Estates that are preparing a high class copra which they ship direct are of opinion that the premiums they obtain are not commensurate with the extra labour involved in making it. It has been suggested that this may be due to lack of competition in the market, or to the fact that the consignments are too small to attract the large buyers. Enquiry into this question is recommended, leading to such alteration to the existing system of grading as may appear advisable.

The existing standard for the f.m.s. grade of Straits copra may be too wide and it is suggested that, in their own interests, producers should consider

the possibility of establishing a super-grade comprising the better part of the present f.m.s. grade and copra of specially good quality.

The Committee agrees with the feeling of estate producers that it is a sound policy to continue efforts to improve the standard of Malayan copra and it is believed that once a superior grade has become established and recognised locally, its acceptance by the European market will probably only be a question of time. In this connexion, group selling, as obtains in certain other industries, might be considered.

Coconut small holdings are mainly owned by Malays and until 1930, the nuts therefrom were almost entirely sold to Chinese dealers who prepared from these a very low grade copra on primitive kilns.

With the fall in prices in 1930 Malays were induced to undertake the preparation of copra. In consequence, a large number of primitive kilns were started throughout the country. More recently, thanks to the efforts of the Department of Agriculture, the Malay owners have erected at various points some 50 kilns which incorporate the latest ideas in relation to kiln construction. The change that has taken place in this respect is of considerable magnitude and importance. An extension of this scheme is therefore advocated.

There is evidence to show that small-holders are not in all cases obtaining full value for their produce. Fortunately, the existence of more or less open markets in Penang, Singapore and Klang have tended to counteract the formation of rings and combines among buyers with the object of depressing prices. Attempts to organise Malay copra-producers into groups for marketing their produce have so far had but little success, but the intervention of independent buyers has usually served to maintain a reasonable parity of prices. It becomes clear that so long as the small-holder who produces copra is more or less tied to selling it locally to small dealers, there will be little inducement for him to prepare good dry copra. If, however, he can be organised to sell a better product in a market which will pay for a better product, it will normally be worth his while to produce the better quality. The Committee therefore commends any efforts designed to persuade the small-holders to combine both for production and sale.

The Committee recommends that dealers in copra and coconut products should be licensed annually, with the object of preventing unfair practices and of checking thefts of coconuts and copra from estates and small holdings. It also recommends that current market prices for copra should be regularly posted at public points in towns and villages where coconuts and copra are bought and sold.

Malayan Coconut Oil.

Coconut oil is produced in 11 factories; there are also two oil mills on estates which at present operate on groundnuts, but which could undertake the production of coconut oil; there is also a not inconsiderable and growing industry in the preparation of coconut oil by small-holders.

The largest mill is situated in Singapore and the second largest in Penang. Both produce oil for local consumption and for export, and one of them is contemplating the introduction of a refining plant.

The production of coconut oil in Malaya for export is increasing. It might be an advantage if large mills could be established in the important coconut producing areas where none exist *e.g.*, at Bagan Datoh in Lower Perak, in the neighbourhood of Batu Pahat in Johore and possibly in Kelantan, with the object of stimulating local competition and raising prices for small-holders' produce.

Bulk shipment of coconut oil is not at present practical, probably because no facilities exist in Asiatic ports to which much of the oil is shipped. Bulk shipment appears to offer possibilities of further economies in production and, as this is a question which affects the industry as a whole, it is one which should receive attention. The production of coconut oil on estates may present possibilities and should also be carefully examined.

It seems probable that processes might be capable of being devised for improving the quality and keeping power of oil produced by small-holders. Investigations into this subject should be undertaken by the Department of Agriculture and if a satisfactory method can be evolved, steps should be taken to bring it to the notice of this class of producer.

By-products of the Industry.

Coconut Coir.—It seems doubtful whether any great prospect of success can attend the introduction into Malaya of a factory system of manufacture of coir. It appears, however, that the possibilities of developing a native coir industry in Malaya should be worth exploring. If the village inhabitants could be instructed in methods of preparing, spinning and weaving coir, a useful addition to existing industries could probably be made and a material utilised which at present goes to waste. It is suggested that this matter be considered by the Department of Agriculture, and if, on investigation, circumstances warrant such a step, a suitable officer should be sent to the Malabar Coast of India for the purpose of investigating the coir industry and acquiring practical details which would assist in developing and popularising the coir industry among small-holders in Malaya.

Coconut Shell Charcoal.—The making of charcoal from coconut shells seems worthy of attention. Such charcoal is reputed to be the highest class of charcoal fuel which can be produced. A considerable industry in the manufacture of shell charcoal exists in Ceylon, the produce being either sold in the village, converted to produce gas, or sold to smelting works in Colombo. Efforts should be made to popularise this industry among small-holders inasmuch as, like coir, it might represent a useful additional source of income.

Coconut as a Source of Alcohol and Sugar.—Coconuts are employed to some extent in Malaya as a source of alcohol and sugar, the palms being tapped

for this purpose. There is a considerable production of toddy for sale to estate labourers, also coconut sugar is produced to some extent in the villages. The production of arrack only occurs to a limited extent. It is doubtful whether in Malaya any great possibilities exist for extension in these directions.

Coconut Oil as an Illuminant and a Source of Power.—It is doubtful whether efforts should be made to re-popularise coconut oil as an illuminant in small holdings as it involves substituting an inferior article for one (refined mineral oil) which is definitely superior. Mixed with a mineral oil, however, coconut oil might be free from the objections to its use alone. Further investigations should be instituted on this subject and if found advisable, the information on the subject disseminated.

The possibility of using coconut oil as fuel in internal combustion engines has also been suggested, but the Committee doubts whether, even at present prices, it is likely to prove an economic proposition.

Freights on Copra.

The present position is that freights to Europe and America from Malayan ports are controlled by the Straits Homeward Conference, which also controls similar freights from neighbouring countries; the declared policy of the Conference is to maintain freights at a parity between the various points of shipment in the Far East. In the case of copra, however, this has been replaced by a system of six-monthly contracts since August, 1933.

The freights on oil seeds from Malayan ports have varied considerably during the past 20 years. At present the rate on copra from Singapore and Penang is 27s. 9d. per 12 cwt. nett weight. If, however, copra is shipped from Port Swettenham, it is subject to an additional arbitrary charge of 9s. per ton. This formerly applied to all classes of goods, but has been removed in the case of rubber.

Coconut producers and exporters urge that the freight rates are too high; that the elimination of competition for freight through the operation of the Conference operates adversely to the industry; that the arbitary charge on Port Swettenham shipments is unjust; that the alleged parity between shipment from different points in the region controlled by the Straits Homeward Conference has not been properly maintained; and that soya beans—which are an important competitor with copra on European markets—are carried from Manchurian ports at an open competitive rate and that the freight is lower than that on copra.

As against this, it has been urged that any decrease in freight rates would not bring any advantage to the copra industry because it would immediately be offset by a corresponding lowering in the c.i.f. price.

The Committee felt that sufficient weight may not have been attached to the fact that copra is selling in competition with a number of other oils and oil seeds which, owing to a variety of causes, have to bear much lower trans-

port charges. Consequently, any fall in the c.i.f. price would tend to improve the position of copra in comparison with its competitors and might lead to enhanced sales.

The Committee agreed that producers and shippers have a legitimate complaint as regards the more favourable position of foreign-produced soya beans and also that producers have a definite grievance in relation to failure to maintain the parity with Ceylon which has been established for some years. The Committee found it difficult to see what justification exists for the maintenance of the Port Swettenham arbitrary surcharge.

The elimination of competition for freights may not be entirely desirable, but the advantages which the Conference affords in the provision of regular and reliable facilities for shipment must not be overlooked. It would be unfortunate if efforts to expand the trade in the Far and Near East should be handicapped by the existence of freight rates which might act as a bar to expanding trade.

The securing of better terms for freight is bound to be a matter for negotiation; the establishment, therefore, of an organisation which can speak for the industry as a whole would serve a useful purpose.

It has been represented that the charges for wharfage levied on coconut produce by the Federated Malay States Railways at Port Swettenham are operating adversely to the coconut industry. The rates were examined and the conclusion was reached that compared with Singapore and Penang, the Port Swettenham charges are heavier, amounting to about 3 per cent. of the value of the goods at present prices. It is suggested that consideration should be given to the possibility of effecting some reduction.

Research in relation to the Coconut Industry.

Compared with other crops, the amount of research accomplished with reference to coconuts is relatively small, and much of it of recent date. At the present time the work has been extended in Malaya, which was the pioneer of systematic work on selection and manuring. Coconut research schemes are also in operation in Ceylon, and in the Celebes in Netherlands India.

In Malaya, research on coconuts is conducted by the scientific staff of the Department of Agriculture, and a specialist officer is attached to the Department for research work on copra. The cost of this work is met by a cess on copra exports from the Federated Malay States.

The Department conducts manurial, cultural and drainage trials and work on the preparation of copra on its coconut experiment station of 80 acres at Klang. The enlargement of this Station to about 200 acres is recommended.

The Department carries on co-operative manurial trials on ten estates. Work is also performed on insect and fungoid affections of the palm. An excellent bulletin containing an account of the various insect pests has been published, and the results of work on certain fungoid diseases have appeared from time to time in departmental publications.

Copra research work has continued uninterruptedly since 1929. It has comprised the investigation of methods of improving Malayan copra and has been shown to have had a marked effect on improving the quality of copra, both on estates and on small holdings. The Officer-in-charge visited Ceylon in 1930 and subsequently prepared a special bulletin (issued in 1931) which gave a full account of the Ceylon industry and suggested means for improving Malayan copra. A large number of other papers on various subjects connected with copra production have also appeared in the *Malayan Agricultural Journal* from time to time.

The value of the work performed is admitted and it is recommended that it should be further improved and, if need be, extended to include work on coconut oil and its utilisation in manufacturing and other processes.

Apart from this, more fundamental research is required, dealing, for instance, with the oil percentage of Malayan copra, and variations in quality and quantity of copra as between districts.

The services of the Officer-in-charge of Copra Investigations should be placed on a more permanent footing. His value to the industry is considerable and his specialised knowledge of the consuming and manufacturing side of the industry is particularly useful in view of the need for fostering and extending the use of coconut products. Arrangements should also be made for the continuation of his work when he is on leave.

The service is at present financed by a cess of 1 cent per picul on copra exported from the Federated Malay States, and a contribution thereto is made from Straits Settlements funds on a basis of 25 per cent. of the Federated Malay States contribution; formerly, it was partly supported by a contribution from Empire Marketing Board funds, but this ceased in 1932. No contributions are at present made to the work from the funds of the Unfederated States, notwithstanding the importance of the coconut industry in some of them, particularly in Johore, and of the fact that free use is now being made of the results of the work by Johore.

The cess should continue to be levied in the Federated Malay States and the Unfederatd Malay States should also be invited to contribute.

The sum at present provided in the estimate for the work, *viz.*, $12,000 represents the approximate yield of the Federated Malay States cess; when the Straits Settlements contribution is added to it, the funds annually collected for the purpose amount to about $15,000, the difference at present going to the Federated Malay States general revenue. This is not considered right; the industry has agreed to tax itself to maintain the work in a time of considerable difficulty and either the whole amount yielded should be applied for the benefit of the industry, or the cess in the Federated Malay States should be reduced to yield with the Straits Settlements contribution the amount required and no more.

The need has been shewn for increased provision of staff to enable the work to be extended; if the contributions collected in the Federated Malay States and from the Straits Settlements are made fully available and are supplemented by proportionate contributions from the Unfederated Malay States and particularly Johore, an adequate sum should be available for the purpose. Accordingly, it is recommended that the Director of Agriculture should be instructed to put forward appropriate proposals.

The need for increased provision for instructional services for small-holders has been indicated. There is at present one Malay officer whose work is concerned solely with instruction in relation to copra-making amongst small-holders. Regular courses of instruction in this subject to Malay officers of the Department and certain local headmen have been held at the Department of Agriculture with satisfactory results. In view of the need for further improving the production of copra, for extending the utilisation of coconut products in other directions, developing new uses and organising growers for manufacture and marketing, this provision requires extension.

A proposal for a staff of Asiatic Instructors for work in various States in connexion with the coconut industry was recommended by the Committee with one dissentient.

It was also recommended that the existing courses of training for local headmen and Agricultural Assistants should be extended to include other aspects of the coconut industry, and as the results of research in various directions became available, information concerning these should be included therein.

The Oil Palm Industry.

Oil palm products comprise palm oil and palm kernels; the former is derived from the fleshy pericarp of the fruit, the latter being contained in the seed; both are used as sources of oil, with the difference that palm oil is extracted in the countries of production, but the kernels are almost entirely shipped to European countries and America, where the oil is expressed.

Palm oil is utilised mainly for soap making, but a further field of utilisation is the tin plating industry in which it is used as a flux, and this is largely extending as a result of the growth of the food canning industries. The utilisation of palm oil in the manufacture of margarine and edible fats is small, and in certain other directions consumption has declined, notably in the candle industries and as a lubricant.

Palm kernel oil is used, on the other hand, in much the same way as coconut oil, which it resembles and for which it can be readily substituted in margarine and soap manufacture, and to a limited extent also for pharmaceutical and toilet preparations.

Palm oil and palm kernels are derived from the extensive belts which occur naturally in certain parts of West Africa, and more recently from the plantations established on an estate scale, particularly in Sumatra and Malaya. In French

Equatorial Africa and particularly in the Belgian Congo, important developments have occurred both in improving natural palm areas and also in establishing areas planted with oil palms on an estate scale.

The area of oil palm areas in Africa is unknown. In the East the planted areas in 1932 were:—Sumatra 169,000 acres, of which 89,500 acres were in bearing; Malaya 61,025 acres, of which 17,974 acres were in bearing.

The industry in both Sumatra and Malaya may be said to have developed almost entirely since the War. Between 1927 and 1932, the total increase in planted area in the two countries was 115,000 acres.

From a commercial point of view, varieties of oil palm fall into two main types, *viz.*, those of which the fruit has a thin pulp (pericarp) and thick shell, yielding a relatively small amount of palm oil and a large amount of kernels, and those of which the fruit has a thick fleshy pericarp yielding a relatively large amount of oil and a small amount of kernels.

The oil palms in West Africa largely consist of varieties which fall into the first class and it is from there that the bulk of the palm kernels and palm kernel oil supplies of the world are derived; the oil palms in the more recently developed areas consist, for the most part, of the second class and yield a higher proportion of palm oil.

In British West Africa, palm oil is extensively used by the indigenous population for cooking and as an illuminant and only a small fraction of the total production is exported. The production is almost entirely in the hands of the natives, whose methods are wasteful and inefficient. Despite recent efforts to encourage the producers to improve the condition of existing palms and to adopt better methods of extracting palm oil, progress has been small. The palm oil from this source, therefore, is generally of inferior quality, both from the point of view of cleanliness and acidity.

In the East and to some extent in the Belgian Congo and in French Equatorial Africa, the production of palm oil has proceeded on different lines, the product being planted on an estate scale and modern factory methods of extracting the oil being practised. As a result, the product is of much higher quality, being free from dirt and of low acidity. On this account, palm oil from these sources has acquired a position of recognised supremacy in the world markets and normally commands a premium over West African oil.

The total exports of palm oil from producing countries in 1932 were 272,144 tons, of which 126,862 tons were from the British Empire. In the same year exports of palm kernels were 620,986 tons, of which 395,038 tons were from the British Empire.

The export of palm kernels remains predominantly West African, but the East is yearly gaining an increasingly important share of the palm oil exports.

The rise in importance of Dutch and Belgian colonies and of British Malaya as palm oil producers is one of the outstanding features of the vegetable oils situation; its significance lies in the fact that their production is well planned

and scientific and the product is turned out with the minimum of waste and the maximum of quality.

In 1932, the total exports of palm oil from Sumatra and Malaya amounted to 83,000 tons, *i.e.* approximately 30 per cent. of the total world exports. It is probable that in five to six years from the present time the total output of palm oil from these two sources will be 180,000 tons and thus come within measurable distance of supplying the world's demand for palm oil if this does not increase beyond the present figure. If to this total be added the steadily increasing production from estate plantations in the Belgian Congo, the demand may exceed the supply.

The major supply of palm kernels comes from West Africa. Palm kernels produced in the plantation industry are generally of lower quality than the native produce of West Africa, owing to the methods employed in extracting palm oil from the fruit.

The indication, therefore, is for high grade plantation palm oil gradually to replace lower grade palm oil, obtained from natural sources, on the world markets, while palm kernels from natural sources will continue to hold the field for many years to come.

Distribution of World Supplies.

The consumption of palm oil rose steadily from 1924 to 1930; thereafter, it has tended to diminish. The principal country of importation is the United States, with England second and Germany third; in the United States and Germany, consumption increased very greatly between 1924 and 1932; in England it has remained steady. It has been stated that in the United States the only source of utilisation for which palm oil is considered indispensable is in the tin plating industry; the consumption of oil for this purpose in the United States of America is stated now to be 15,000 tons per annum. In the United Kingdom, the South Wales tin plate industry absorbs about 3,500 tons.

In 1933, the United States of America imported 125,585 tons of palm oil, the United Kingdom 61,720 tons, Germany 42,992 tons, Italy 48,975 tons and France 15,721 tons. In the same year, the most important importing countries of palm kernels were Germany 244,298 tons, United Kingdom 128,049 tons, Holland 29,060 tons and Denmark 20,890 tons.

The situation created by the imposition of the new processing tax on imported vegetable oils in the United States is bound, however, to have an equally serious effect on the market for palm oil as on that for coconut oil, and the outlook for the industry is on this and other accounts very difficult.

Market Prices of Palm Oil and Palm Kernels.

Palm Oil.—In the years immediately prior to the War, prices for palm oil (Bonny Old Calabar) were relatively stable at about £30 per ton. During the War, the upward trend was very similar to that of copra, though it did not reach such high levels, the price being fixed in 1917 at £48 per ton. On the removal

of control, prices rose to about double the controlled price in 1920, but falling by the end of that year to below it. From 1921 to the end of 1929 prices generally ranged from £31 to £38 per ton with a sharp rise in December, 1924 to £44 per ton which was, however, not maintained. Since 1927, prices have steadily sagged until at the end of May, 1934, they reached the unparalleled low level of £11.15.0 in barrels and £8.10.0 in bulk per ton.

Quality of Palm Oil.—Palm oil is sold on a basis of the content of free fatty acids. Bulked palm oil is exported on a 5 per cent. free fatty acid basis.

West African palm oil in barrels is sold at Liverpool on a basis of 18 per cent. free fatty acid, a bonus of 1s. 9d. per ton is allowed for each unit below 18 per cent., and a similar amount is deducted per ton for each unit in excess of 18 per cent.

There is also a market in Liverpool for plantation palm oil in barrels on a 5 per cent. free fatty acid basis. Malayan palm oil is included in this category.

Palm Kernels.—The market for palm kernels in the years immediately before the War showed relatively greater fluctuation than did palm oil, ranging between £16.12.6 and £24 per ton and averaging £20 per ton. In the early years of the War, the price sagged, but recovered in 1915; in 1917, the prices of palm kernels and palm kernel oil were fixed at £26 and £52 per ton respectively. On the removal of price control in 1919, prices jumped, £45 per ton for palm kernels and £110 per ton for palm kernel oil being reached early in 1920. Thereafter, prices sagged sharply to £18.10.0 for kernels and £40 per ton for kernel oil in 1921. Prices remained relatively steady until 1929 at between £18 and £22 per ton for kernels, and £35 to £44 per ton for kernel oil. By the end of 1929, prices again declined and by the end of 1933 kernels had fallen to £7.18.9 per ton. The decline continued and at the end of June, 1934, Malayan palm kernels were quoted at £5.15.0—the lowest ever recorded.

The Malayan Position.

Oil palms in Malaya are cultivated exclusively as an estate crop and alienation of less than 200 acres for planting with this crop is not permitted.

Cultivation is mainly confined to the States of Perak, Selangor and Johore, with smaller areas in Negri Sembilan, Pahang and Kelantan. The total planted area at the end of 1933 was 63,646 acres and unplanted reserves 47,021 acres.

Conditions in Malaya are particularly well suited to the cultivation of oil palms. The crop is planted on 33 estates, the average size of an estate being nearly 2,000 acres. The largest estate is situated in Johore and is 10,173 acres in extent. Of the total area, nearly 35,000 acres, or rather more than half, is controlled by two planting groups which also control considerable areas under the same crop in Sumatra. It is considered that the most economic unit for an estate is about 10,000 acres.

Of the total planted area, only about 12,000 acres can be regarded as being in full bearing; a further 19,000 acres are in partial bearing, while 32,000 acres

have not yet reached the production stage. It is, therefore, obvious that production is bound to increase considerably during the next five or six years.

Yield of Palm Oil and Kernels.

Yields are dependent on the character of the material planted. The earlier plantations in Malaya and Sumatra were established with unselected seed. A maximum yield of 1,600 to 1,700 lbs. of palm oil per acre per annum may be expected in such cases.

More recently, the planting of high-yielding selected seed has become extensively practised; when seed of this type is employed, yields in the neighbourhood of 1 ton or more of oil per acre per annum can be anticipated. In Malaya, about 30,000 acres or 50 per cent. of the total area have been planted in selected seed; that is, however, practically confined entirely to the more recently established estates which have not come into full bearing.

If yields are to be maintained, manuring is essential. A considerable amount of work on this subject has been performed in Malaya and Sumatra, and the manurial requirements of the crop are known with fair exactitude. The dominant fertilising constituent is phosphoric acid, and phosphoric dressings —usually in the form of ground rock phosphate—are now regarded as an essential part of planting practice.

In addition to palm oil, the palm kernels at an average rate of 3 cwt. per acre are produced.

Organisation of Production.

Oil palm estates are, in general, well planned and planted, and the majority of the factories modern and up-to-date. The larger estates are provided with excellent transport facilities.

The extraction of oil demands the use of moderately elaborate installations. Two alternative factory systems for oil extraction exist, *viz.* the centrifugal system, by which the oil is extracted from the fruit by a centrifugal plant, and the press system, by which the oil is pressed out in hydraulic presses. The efficiency of the alternative systems is about equal, although the press system is more expensive to install. In Malaya, seventeen centrifugal systems have been installed and three press systems.

Marketing of Produce.

Almost the entire crop is exported, though a limited quantity of palm oil is used locally in soap works.

Shipment of oil was formerly effected entirely in barrels, but in 1933 a company was floated for the shipment of palm oil in bulk by tank steamers, which has established a very efficient bulk shipment plant at the Tanjong Pagar Docks in Singapore, capable of handling the whole of the present production of the industry and of being increased to meet requirements as the industry

expands. One large company has established its own bulk shipment plant at Port Swettenham. Subsidiary bulking plants have been erected on certain estates, and arrangements have been made with the Federated Malay States Railways for the transport of oil to points of shipment in bulk in tank waggons. A certain amount of the crop is, however, still shipped in barrels, usually for destinations where facilities for the bulk handling of the product do not exist.

The marketing of palm oil in Malaya is controlled by a pool which includes all the more important producers. There are also two similar selling pools in Netherlands India which work in association with the Malayan pool.

An association of palm oil producers has been formed under the name of "The Palm Oil Producers' Association of Malaya" with the object of protecting the palm oil industry and affording members facilities for co-operation in matters affecting their interests.

Research on Oil Palms.

Throughout its development, the industry has made free use of scientific investigations and research and its present highly efficient condition is undoubtedly to a considerable extent due to this. Research work on many questions connected with the crop has been performed by the Department of Agriculture in Malaya and by the A.V.R.O.S. Experimental Station in Sumatra. Investigations have dealt with all branches of the industry, and the results published in the bulletins of these two organisations.

There are about 200 acres of oil palms under experimental cultivation at the Central Experiment Station at Serdang with an experimental factory.

A work on "Oil Palms in Malaya" was issued by the Department of Agriculture in 1927; this is now out of date and out of print; a new edition is in the press and will shortly be published which will provide an up-to-date and complete handbook for the industry.

The research work is closely followed by planters and the results of it are immediately applied; also the services of Government scientific officers are in constant requisition for advice and guidance. The industry is highly appreciative of the facilities afforded by Government in this connexion. In addition, certain of the largest planting groups themselves employ scientific officers for work on the crop. Between these gentlemen and the staff of the Department of Agriculture close collaboration exists.

When the highly organised condition of the palm oil industry is contrasted with that of the coconut industry, the difference is striking. It is obvious that the industry is in a much better position to meet emergencies than is the coconut industry.

Terms of Alienation of Land for Oil Palm Planting.

In the Federated Malay States, prior to 1925, a premium of $3 per acre and rent of 50 cents per acre per annum for the first 6 years and thereafter at $2 per acre were charged. Since 1929, the premium has been raised to $10

per acre with a rent of $1 per acre per annum for the first 6 years and $4 per acre thereafter with a rebate on such areas as are actually cultivated with oil palm. Provision has been made for the levying of an export duty of 2½ per cent. *ad valorem,* but this has not yet been imposed.

In Johore, the terms of alienation are a premium of $3 per acre with a rent of 50 cents per acre per annum for 6 years and $1 per acre thereafter.

Estimated Capital Value of the Industry.

It is computed that the total capital which has been invested in the industry amounts in round figures to $20,000,000.

Condition of the Industry.

The average cost of production of palm oil in Malaya is about 3 cents per lb. f.o.b. made up as follows:—field costs .60 cent; harvesting .45 cent, manufacture .40 cent, local transport .53 cent, other local charges 1.00 cent. Of these charges, 30 per cent. represents labourers' wages.

Three cents per pound is equivalent to £10 per ton c.i.f. European ports. About 3 cwt. of kernel are obtained for every ton of oil, but at the present price of £5.15.0 per ton the extra cost of production is stated to leave no margin of profit.

In these conditions, it is clear that oil palm estates in Malaya are, almost without exception, operating at a loss at the present time.

Unlike Sumatra, the arrival of the majority of plantations in Malaya at the bearing stage has coincided with the decline in prices. Nevertheless, until the end of March 1932, the level of prices was such that the average estate in bearing was in a position to cover its costs and if this price level had been maintained, could with progressive increase in yield look forward to moderate profits.

The situation has, however, completely changed owing very largely to the imposition of the American processing tax; it is impossible to foresee what the ultimate outcome will be, but obviously the situation requires the most careful watching and sympathetic treatment. The industry represents an asset of great value to the country on account of the capital embarked therein, the employment which it affords to a large number of people, and because it constitutes an outstanding example of development according to an ordered plan, while its present difficulties are due to economic and political events which could not have been foreseen.

Suggestions for Relief of the Oil Palm Industry.

The basic economic factors which apply to the oil palm industry are similar to those which relate to the coconut industry, so that, generally, measures applicable in the case of the one can be applied to the other.

There are, however, certain difference in size of the unit area operated; degree of organisation at present; difference in yield of oil per acre, variation

in range of employment of the products—coconut oil having the wider range of uses—difference in area under the two crops.

No measures of artificial restriction of production are recommended to meet the present situation and owing to its excellent organisation, it is thought that the oil palm industry is in a better position to weather this difficult situation than is the coconut industry.

Prohibition of Further Planting.

It is recommended that no new large-scale alienation of land should be made for planting oil palms. On the other hand, the planting of oil palms should not be prohibited on reserve lands already alienated for the crop; the economic size of plantation units is of importance in operation and, in spite of low prices, it may be to the advantage of certain properties to complete their planting programmes. In any event, the addition to planted areas that are likely to occur as the result of this, can have very little effect on the situation.

Relief by Regulation of Markets.

Relief by the intervention of the Imperial Government is recommended, with a view to regulating the admission to the markets of Great Britain and the Dominions of foreign whale oil, soya beans and cotton seed, which compete with palm oil as well as coconut oil from the British Empire.

It is understood that by certain methods of treatment, palm oil can be successfully used in margarine manufacture and it is suggested that the industry should explore the possibilities in this direction with a view to obtaining an increased share of the trade.

Expanding Malayan Foreign Trade in Palm Oil.

It is thought that opportunities exist for expanding exports to the markets of the Near and Far East and to Russia, and these should be investigated. The fact that the industry is already well organised for representation of its interests and for collective sales places it in a favourable position to undertake such investigation and negotiations.

Increasing Local Consumption.

The opportunities for expansion of local consumption are less favourable than in the case of coconut oil, colour, taste and smell being against it. Unrefined palm oil is particularly rich in Vitamin A and on this account is a very desirable article of diet.

It has been employed successfully in Malaya to replace butter fat in skimmed milk for feeding calves; with success in rearing puppies and also when fed to in-whelp bitches during the period of gestation and lactation.

An attempt to encourage its use in the above directions should be made by judicious advertisement.

Direct Assistance to the Industry.

As a temporary measure of relief in the Federated Malay States, it is suggested that quit rent on land alienated for oil palm cultivation might be reduced to the Johore level, *viz.* 50 cents per acre per annum for the first 6 years, and thereafter $1 an acre per annum—the relief to be regarded as being in the nature of a temporary waiver and to be subject to revision annually.

Reserves.—It is considered that, during the present depressed condition of the industry, insistence on the fulfilment of cultivation clauses should be postponed. In the case of all lands alienated for palm oil cultivation, appli-tion for relief from any penalties which may be liable to be imposed for failure to comply with the terms of alienation should be sympathetically considered.

Freight on Palm Oil.

There is a general feeling amongst producers that freights are too high. The rates for bulk shipment of palm oil quoted by the Conference are 51s. 6d. per ton as against 48s. per ton for coconut oil, and in both cases an extra charge of 2s. per ton for cleaning the tank is made. The reason for this differentiation is not obvious and it appears to discriminate heavily against palm oil.

Research in Relation to the Industry.

The industry should continue to receive assistance from Government in the matter of scientific advice and research; owing to the relatively small size of its export at present and the difficult position in which it is placed, it is obviously out of the question that the industry should at present be called on to contribute thereto. It is considered, however, that when the prospects of the industry improve and it is reaching the stage of full production, the question of its making some contribution to the cost of research should be considered.

Other Vegetable Oil Industries in Malaya.

The only edible oils and oil-bearing materials of vegetable origin, which are of major importance locally, other than coconut and oil palm products, are Groundnut (Kachang) oil, Gingelly (Sesame) oil and Soya beans.

Groundnut Oil.

The oil is derived from the fruit of the leguminous plant *Arachis hypogaea*, which receives its name from the peculiar habit of ripening its fruit in the ground. It is an annual crop and takes about five months to mature from time of planting.

The fruits, which have a slightly sweet, nutty flavour, contain about 30 to 50 per cent. of oil according to variety.

The cultivation of the crop is world-wide, being grown largely in North and South America, in parts of Africa, and also extensively for export and local consumption in India, China and Netherlands India.

The oil comes on the market in two forms—cold-pressed and hot-pressed; the cold-pressed oil is nearly colourless and has an agreeable taste and smell and is largely used for edible purposes; the hot-pressed oil is of a yellow colour and is used in soap manufacture. The press cake is very rich in nitrogen and on this account is highly prized both as a stock food and as a manure.

The world's export production of groundnuts is in the region of 1,200,000 tons. The largest exporters are India, China, Nigeria, Senegal and Gambia.

Malayan Position.

Groundnut oil is the principal oil consumed by the Chinese population and large quantities of oil and groundnuts are imported annually, the oil from imported nuts being extracted in local oil mills. The nett imports into Malaya in 1933 were 11,730 tons of groundnut kernels and 6,856 tons of groundnut oil, to a total value of $2,434,638. In 1932, 98 per cent. of the imports of groundnuts came from Netherlands India; 63 per cent. of the oil from China and 37 per cent. from Netherlands India.

In 1933, duties for revenue purposes, were imposed on groundnuts and groundnut oil imported into the Malay States and in the same year under the Ottawa Agreement, differential duties were added, whereby a preference was accorded to groundnuts produced in the British Empire. In the Straits Settlements, however, groundnuts from all countries are admitted free of duty.

The imposition of the differential scale of duties has led to an appreciable increase in the importations of groundnuts from India. Imported groundnuts are crushed and converted into oil both in Singapore and at certain points in the Federated Malay States. Under the Ottawa Agreement, groundnut oil expressed in the Straits Settlements is regarded as a manufactured article and, as such, is admitted to the Malay States at the British preferential rate of duty, provided it can be shown that 25 per cent. of the labour and/or materials employed in its manufacture are British. In consequence, oil millers in the Federated Malay States complain that they are placed at a disadvantage inasmuch as, while they are restricted to the use of Empire groundnuts, their competitors in Singapore labour under no such restriction and can obtain their groundnuts from a cheaper and nearer foreign source of supply.

There appears to be foundation for this complaint, but in existing circumstances, it is not easy to see what remedy can be applied.

It appears, however, that the definition of a manufactured product may not be devoid of difficulties and it is arguable whether groundnut oil can be classified in this category.

Groundnuts are grown to a small but increasing extent locally; the cultivation is practised by Chinese small-holders and the crop is grown in rotation with vegetable and other crops.

The total area cultivated under the crop in Malaya in 1933 was estimated to be 1650 acres. It is cultivated in the Federated Malay States, mainly in Perak and Selangor, and in the Unfederated Malay States, mainly in Johore and Kedah.

Under favourable conditions, it is possible to obtain two crops per year off one piece of land, so that 400 lbs. to 800 lbs. of oil per acre per annum can be obtained, the rate being halved if only one crop is taken.

Prices for groundnuts have ranged from an average of £19 per ton in 1929 to £11 per ton in 1933 c.i.f. European port.

Gingelly Oil.

This oil is extracted from the seed of *Sesamum indicium*, an annual erect-growing bush, of which the small flat seeds contain about 50 per cent. of oil.

India is the largest grower of gingelly. The world's production is estimated to amount to about 750,000 tons and exports to 150,000 tons. The largest exporter is China.

The seeds contain 40 to 50 per cent. of oil. Gingelly is a bland oil, nearly colourless and without smell. If carefully prepared, it keeps sweet; it is used for cooking and edible purposes. In India, it is also used for anointing the body, for illumination and for the manufacture of soap.

Malayan Position.

Considerable quantities of gingelly seed and oil are imported into Malaya annually. In 1933, 2811 tons of gingelly seed and 24 tons of oil were imported to a total value of $264,680.

In Malaya, the oil is largely used by Indians, and the recent diminution of imports is attributed to the considerable repatriation of Indian labour that has occurred. The oil is for the most part expressed by Indians in the vicinity of large towns, small wooden mills of the mortar type operated by bullocks being employed.

Under average conditions, the crop grows well in Malaya, and it is somewhat surprising that it is so rarely cultivated. The crop takes three months to mature from the time of sowing the seed; yields vary from 500 to 1,000 lbs. of seed per acre per crop.

Gingelly oil is subject to duty on importation into the Malay States, differential duties having been imposed in favour of Empire products as part of the Ottawa Agreement. Gingelly seed pays no duty.

Soya Beans.

The soya bean is the seed of a leguminous plant indigenous to China, Japan and Indo-China. The largest producers are China and Manchuria. The annual crop is estimated at 13,000,000 tons, of which 5,000,000 tons come from Manchuria. It is also grown extensively in the East in Korea, where annual

production is about 560,000 tons, Japan about 375,000 tons and Java about 100,000 tons. Exports from China and Manchuria average about 2,000,000 tons a year with the addition of a further 100,000 tons of oil—equivalent to 700,000 tons of beans.

The crop is now also cultivated on a large scale in the United States, where in 1931 the total area approximated to 3½ million acres, the crop amounting to 121,000 tons, and in Russia, where in 1931 the total area was stated to be 1,100,000 acres. With the restriction of imports of coconut oil and palm oil into the United States consequent on the processing tax, the further expansion of soya bean cultivation in that country seems probable.

Attempts have been made to grow the crop in India, Burma, South Africa and Australia, but, so far, without success. In Malaya, experimental work by the Department of Agriculture has shewn that the crop will grow fairly well and it is cultivated to a small extent by Chinese market gardeners, but all attempts to popularise it have, so far, failed.

The crop yields about 600 lbs. of beans per acre; the seed contains 16 to 20 per cent. of oil and has thus a much lower oil content than the other oil-bearing materials which have been considered. It is extensively used as an edible oil and for margarine manufacture; before the art of refining was as well understood as at present, some difficulty was experienced in deodorising the oil satisfactorily, but now the taste and smell can be completely removed. The nett imports of soya beans into Malaya during 1933 were 13,207 tons, shewing a sharp increase over the previous year.

There is, however, no industry in Malaya in extracting the oil from the beans; consequently, soya beans can hardly be considered as competing with locally produced oil-bearing materials, although the possibility of their doing so must not be overlooked.

Recommendations regarding Groundnuts, Gingelly and Soya Beans.

In view of the need for extending the consumption of locally produced coconut and palm oils, marked encouragement of the cultivation of other vegetable oils that may compete therewith should be avoided.

The replacement of groundnut oil by coconut oil and palm oil in domestic consumption in Malaya is desirable. The process of replacement is, however, likely to be gradual; it may lead to the placing of blends of coconut oil with groundnut oil on the market and the erection of refining plant for coconut oil and will probably have to be accompanied by propaganda designed to popularise the change.

Imports of groundnuts and groundnut oil are bound to continue for some time, and the moderate extension of groundnut cultivation for the production of oil for direct consumption or for blending should not be discouraged.

The replacement of gingelly oil by coconut oil should prove easier of accomplishment.

While soya beans are not at present a direct source of oil for domestic use, the possibility must not be overlooked. The imposition of a duty thereon in the Malay States should be considered.

The appointment of a Standing Committee to advise the Governments concerning duties on oils and fats has already been recommended and it is considered that this question should be referred to it.

Oils and Oil-bearing materials of minor importance in Malaya.

There are a number of other vegetable oil-bearing materials capable of being produced in Malaya, which might compete with coconut and palm oils, but which are not at present of sufficient importance to need more than passing reference. The most important are: cotton seed, kapok seed, maize, tea seed, illipe seed, mahua and sunflower seed, and a number of others.

Mention should also be made of Piquia oil obtained from the fruit of a South American tree, yielding an oil not dissimilar to palm oil and of which a plantation was established some years ago in South Kedah. The prospects for the extension of its cultivation do not appear to be particularly favourable and the oil has not, so far as is known, appeared on the market.

There are also a number of non-edible oil-yielding crops which could be grown, notably castor oil, which is extensively cultivated in India and elsewhere; the prospects for its successful cultivation in Malaya do not, however, appear to be great. Castor oil is used as a lubricant, in soap making and as a medicine.

Tung oil, yielded by various species of Aleurites, has also repeatedly attracted attention as it is derived from plants which might be capable of being grown in Malaya. It is chiefly employed as a drying oil for use in paints; it is also used in China as a wood preservative and as an illuminant. It is chiefly produced in China and is in steady demand; the plant is now also being grown in several countries, notably the United States of America.

The results of experiments have shewn that its cultivation offers small prospects of success on the plains in Malaya.

Rubber Seed Oil.

Although rubber seed oil is hardly a commercial product at present, it demands more than passing reference owing to the fact that large quantities of rubber seed are produced annually on rubber estates in Malaya. In 1929, it was estimated that the total yield of rubber seed was about 225,000 tons per annum from a planted area of 2¼ million acres, and from the present planted area of about 3¼ million acres the estimated production is probably in the region of 300,000 tons. It is, of course, impracticable to collect the total amount produced, but it is probable that about 100,000 tons per annum could be gathered and marketed.

Rubber seed consists of approximately 40 per cent. shell and 60 per cent. kernel. The seed contains approximately 25 per cent. of oil, calculated on the whole seed, so that the annual potential output on the basis of 100,000 tons of exportable rubber seed would be approximately 25,000 tons. The oil itself is

a semi-drying oil, that is to say, it is capable of being used in the manufacture of paint, although its qualities in this respect are inferior to those of linseed oil; it can also be used for the manufacture of soap. It is uncertain to what, if any, extent it could be used as an edible oil. Under the Rubber Regulation Enactments, the export of rubber seed from countries adhering to the International Agreement is prohibited.

It appears that no duties are at present levied on rubber seed or rubber seed oil imported into the United States of America and as a result, renewed enquiries have lately been received from America as to the possibility of developing a trade in this product. It seems possible that means might be devised for sterilising rubber seed prior to export, so that the risk involved of sending out viable seed would be minimised, although it could not be entirely removed; or, alternatively, if the seed was decorticated locally before export and the export of undecorticated seed prohibited, the same end could be secured.

On the other hand, such a trade would involve adding one more source of supply of oil to the already over-stocked world market and, in view of the fact that the imposition of the United States processing tax is apparently designed to assist the American farmers, it seems not unlikely that, if a considerable import of rubber seed or rubber seed oil into the United States developed, it might only be a question of time before a similar duty was imposed on rubber seed. On the whole, it is undesirable to make any special arrangements to facilitate export of this product.

Volatile Oils.

The only other vegetable oils which have any importance locally are volatile or essential oils. There is a small trade in the cultivation and distillation of patchouli and citronella in Johore, Province Wellesley and Penang, while cloves are also grown in Penang and Province Wellesley to some extent. As, however, these constitute an entirely separate and distinct industry, they need only be mentioned.

Abstract.

EIGHTEENTH REPORT ON NATIVE RUBBER CULTIVATION IN NETHERLANDS INDIA.

First Quarter 1934.

Prepared by the Bureau of Agricultural Economics of the Agriculture Fishery Service of the Netherlands Indian Department of Economic Affairs at Batavia, Java.

Prices.

Price variations continued as a results of increased American consumption and the confidence felt in the satisfactory conclusion of the restriction negotiations.

Java standard sheet at Batavia rose from 13.8 guilder cents per ½ kg. in December 1933, to 14.4 cents in January 1934 while average prices in subsequent months were 15.6 guilder cents in February and 16.3 guilder cents in March per ½ kg.

The price for medium blanket advanced to a greater extent than did the price for the estate product, *i.e.* from 9.3 guilder cents per ½ kg. in December 1933 to an average of 13.2 guilder cents per ½ kg. in March 1934. In relation to the sheet prices, the blanket price in December was 67.4 per cent. thereof, in January 70.1 per cent., in February 77.5 per cent., and in March 81 per cent.

Exports.

Exports of native rubber reacted to these improved prices. Whereas the export of such rubber in the last quarter 1933 was 38,954 metric tons, that of the first quarter 1934 was 50,714 tons, the monthly figures being: January 1934, 15,293 tons, February 14,675 tons, March 20,746 tons. The lower exports in February are attributable to the short month and to the fact that in many rubber regions padi was being harvested.

The provinces exporting rubber may be divided into two groups. The first group comprises the provinces of Palembang, East Coast of Sumatra, Tapanoeli, Sumatra West Coast, Banka and Dependencies, and Achin and Dependencies—in all of which the exports have greatly advanced in the past six months. In the second group are Western Borneo, Djambi, Riouw and Dependencies and, to a lesser extent, also the South and East Sections of Borneo. In these Provinces the export increase has proceeded but very gradually.

The large increase of rubber exports from the provinces in the first group is due to the fact that the tappable rubber is still considerably in excess of the area actually tapped and also that, up to the end of the first quarter, there was

no great scarcity of labour. In this quarter no factors intrude to any important degree which would tend to limit production.

In the second group, labour shortage may be the reason for the slower increase of exports. Labour will flow from the thickly populated parts growing foodstuffs to the more thinly populated rubber districts, but rubber production in such regions will vary, as food production is of first consideration.

It is not possible, in view of the greatly extending rubber tapping, to give an estimate of the proportion of the tappable rubber now in production; the various reports, however, indicate that extensive areas, especially in Djambi, Palembang, South and East Borneo, and Western Borneo, were not being tapped towards the end of the quarter under review.

Local Reports.

Achin and Dependencies.—At the end of the quarter 60 per cent. of the tappable rubber was being tapped. To an increasing extent, tappers were being employed on wages. The price of wet slab at Langsa advanced from fully *f* 8 per 100 kg. in January to *f* 15 in March.

Tapanoeli.—Exports by way of Sumatra West Coast and Pakan Baroe were maintained at fully 200 tons per quarter. The two rubber factories produced 322 tons of blanket sheet, as against 487 tons in the fourth quarter 1933. This regression reflects an important improvement in quality of the native product (sheety crepe), of which only a small amount was unfit for direct export and required re-milling.

Tapping coolies are generally paid in produce, yet wages have been reported in some cases. The improved conditions in the rubber regions have resulted in a general price increase for necessities, so that it was possible for rice export regions (such as Toba) to profit from the rubber revival.

Sumatra West Coast.—A considerable increase of tapped area is reported, but extensive areas of tappable rubber are still left untapped. Most of the labour is still family labour, while tappers receive as wages two-thirds of the product.

Palembang.—Exports increased from 5,666 tons in the last quarter of 1933 to 9,893 tons in the first quarter of 1934. Tapping areas were extended, both on new areas and on previously tapped areas.

Prices in the interior ceased to follow Singapore price increases.

Djambi.—Due to scarcity of labour there was no increased rubber production.

Riouw and Dependencies.—The production remained fairly constant, due to labour shortage.

Banka and Dependencies.—Exports increased from 265 tons in the last quarter of 1933 to 634 tons in the first quarter of 1934.

In the last report, mention was made of an increasing preparation of sheet rubber and of a considerable import of rubber mangles. This development

greatly increased in the first quarter of 1934. At the port of Pangkal Balam, 132 rubber mangles were imported in the period under review.

The quality of rubber has greatly improved; nearly all rubber is now worked up into sheets.

Western Borneo.—The exports in the fourth quarter 1933 were 7,620 tons, and increased to 9,887 tons in the first quarter 1934. Work is mostly effected by family labour in the smaller holdings, but in the larger holdings labourers from the district on wages are employed.

South and East Borneo.—The exports from this region from August 1933 up to the present time averaged from 2,400 to 2,500 tons a month. Only after the west monsoon wet padi had been harvested and the east monsoon wet padi fields had been planted did a distinct reaction to better prices become evident, when many labourers left the thickly populated Oeloe Soengei region for the thinly populated rubber districts in the hilly country, to exploit the rubber holdings on a share basis.

Tapping extended along the east coast of Borneo, so that in March some rubber was exported from Samarinda.

Rubber factories shewed increased activity and towards the end of the quarter under review, they were working at full capacity.

Departmental.

FROM THE DISTRICTS.

August, 1934.

Compiled by the Chief Field Officer from Monthly Reports submitted by Field Officers.

The Weather.

In the northern half of the Peninsula the rainfall exceeded average. With a few exceptions, precipitation was below average in the southern areas. Conditions in Johore and Singapore were hot and dry practically throughout the month.

Remarks on Crops.

Rubber.—Prices remained firm throughout the month and showed an increase in all States over those of the preceding period.

In some centres instructional activities have resulted in the manufacture of improved sheet, with a consequent premium for quality.

With the exception of Malacca and Johore, where tapping is heavy, more particularly in the latter State where multiple cuts are reported to be tapped two or three times daily, excision is conservative due partly to regulation, but mainly to the exigencies of padi cultivation.

Further improvement in the maintenance and sanitation of holdings has been recorded, while disease control has received a satisfactory measure of attention. A steady demand for approved fungicides has been maintained.

Coconuts.—There has been a decline in the production of good quality copra from small holdings as a result of unsatisfactory prices. It is reported that increased interest has been taken in the manufacture of coconut oil.

Copra from improved types of small holdings kilns realised up to $3.30 per picul, which represents at the present time a high standard of quality.

Padi.—In Kedah, Perak and the Province satisfactory weather conditions enabled good progress to be made with cultural and planting operations. The rice caseworm *Nymphula depunctalis* was responsible for much nursery damage in the southern mukims of Krian, and flood damage affected some 497 acres at Padang Lallang in the Kota Star district of Kedah.

Work in Pahang is well advanced, but portions of Negri Sembilan and Selangor are backward. Transplanting in the inland districts of Malacca is practically complete, but the preparation of land within the coastal belt has been delayed owing to lack of water.

Conditions at Segamat and Tangkah in Johore are satisfactory, but in other centres little work has been done, and much land left uncultivated.

Tobacco.—Prices have remained steady in Johore except in Segamat district where supplies have been plentiful. The area under this crop at Kluang has been extended. The export of dry leaf from Jerantut in Pahang to Kuala Lumpur has been maintained.

Fruit.—In Negri Sembilan, durian, langsat and rambutan are in season in the Kuala Pilah District, and durian and rambutan are being harvested in Jelebu. The crop is small but of good quality. A good crop of machang is reported from Pahang, but durians in that State have been disappointing. The mango season in Krian was extremely poor.

The main fruiting season for pineapples ended early in the month. Owing to shortage of supplies of fruit a number of the factories have temporarily ceased operations.

Agricultural Stations.

The total crop of green leaf harvested during the month at the Tanah Rata Experiment Station, Cameron Highlands, was 7,969 pounds from which 1,506 pounds of made tea were manufactured.

Satisfactory distributions of planting material have been maintained from all Stations.

An area of twelve acres of jungle land has been provisionally selected for large scale experimental work on pineapples in southern Johore.

Padi Stations and Test Plots.

At the Telok Chengai Station in Kedah, all planting was completed under excellent weather conditions. A new experiment to ascertain the effect of not cutting back nursery seedlings was laid down.

Planting commenced and good progress was made at the Titi Serong Rice Experiment Station, where nurseries benefitted considerably by favourable rains throughout the month.

With the exception of short term padi, planting was completed at the Pulau Gadong Station, Malacca.

Good progress has been made on all padi test plots including developmental work on new areas in Perak and Selangor.

Rural Lecture Caravan.

The Rural Lecture Caravan commenced an extended tour of Pahang, and at the end of the month had visited most of the important centres on the Pahang river between Temerloh and Pekan.

Carp Rearing.

A further 3,000 fry were received from Singapore and delivered to a breeder at Chat in Pahang. A former consignment is making good progress

in the ponds at Benta, and has now reached a size of approximately two kati (nearly 3 lbs.) each. They are being fed on guinea grass and tapioca leaves.

An experimental consignment of fry from Singapore to Kelantan, despatched in sealed containers with an excess of oxygen in the water, arrived in excellent condition. This method of transport reduced costs which were previously unduly high.

Pigs.

A serious outbreak of swine fever occurred in the Seletar district of Singapore towards the end of the month. The Agricultural and Veterinary Departments are co-operating in an endeavour to control the epidemic which has caused breeders considerable losses.

Home and School Gardens Competitions.

The half-yearly judging of school gardens was completed in Province Wellesley and Penang during the month. The general standard of work in many of the gardens was very satisfactory.

171 entries have been received for participation in the home garden competition organised in Pahang, where a similar competition for school children is being arranged.

Penghulus' Course of Instruction.

In connexion with the special course of instruction for Penghulus, organised by the Department of Agriculture, during August, 35 Penghulus from the Straits Settlements and Federated Malay States attended a course of rice instruction at the Pulau Gadong Rice Station, Malacca. A course of lectures, complemented with field demonstrations covering the more important principles of husbandry, was delivered during the period August 19th to 22nd.

The M.A.H.A. Magazine.

Vol. IV, No. 3, July 1934. Price 30 cents.

The current issue of *The M.A.H.A. Magazine*—the official organ of the Malayan Agri-Horticultural Association and of the Selangor Gardening Society, contains, amongst other interesting features, two original articles, the first dealing with the planning of a medium-sized garden by F. Flippance; the second, by E. J. McNaughton on the Food Requirements of Plants. These authoritative articles may be confidently recommended to gardening enthusiasts.

DEPARTMENTAL NOTES.

Obituary.

Mr. C. B. Holman-Hunt, B.A. (Cantab), F.E.S , F.Z.S.

We regret to announce the death, at the age of 68 years, of Mr. Cyril Benoni Holman-Hunt, which recently occurred in London following an operation.

Mr. Holman-Hunt was appointed Curator of the State Museum, Selangor in 1909 and was transferred to the Department of Agriculture, Straits Settlements and Federated Malay States, in the following year as Assistant Entomologist, an appointment he retained until 1917 when he was promoted Systematic Entomologist. He remained in this post until his retirement from Government service in January, 1922.

He had a wide knowledge of the East, having resided both in Ceylon and India before coming to Malaya; being engaged in practical agriculture during this period, his experience was of value to his work in this Department. The old files of the *Malayan Agricultural Journal* will be found to contain numerous articles by him on the subject of Entomology which was not only his specialised subject, but which had always been his principal hobby.

The rapidly-thinning ranks of his contemporaries in Malaya—both his colleagues in the Department and his other friends throughout the country—will regret the passing of a man with an attractive, loyal, and cheerful personality.

"Penghulus'" Course.

A course of instruction for "Penghulus" (local Malay headman) was held in two parts between August 8th. and 22nd. 1934. The first part was held at the School of Agriculture, Malaya, at Serdang from August 8th. to 18th., 44 attending the course. The subjects included nature study, marketing of village produce, small holding credit, improvement of small holdings, poultry husbandry. Visits were made to the Central Experimental Station, Serdang, where practical subjects studied included fruit cultivation, tobacco, coffee and other annual crops suitable for small holdings. The course was conducted by officers of the Department of Agriculture and of the Co-operative Societies Department.

For the second part of the course, from 19th. to 22nd., the party was distributed so that each penghulu could study subjects of particular importance to his own district. One party, consisting of 9 penghulus, went to the Klang Coconut Experiment Station for a course of lectures and practical work on the manufacture of copra; another party of 7 were at the Department of Agriculture, Kuala Lumpur, where officers of the Rubber Research Institute of Malaya were in charge of the course. Lectures were delivered on the preparation of good quality rubber, husbandry of small holdings, pests and diseases. Practical demonstrations were given in coagulating and machining, tapping, soil conservation, and treatment of mouldy rot disease. A visit was also paid to the

Rubber Experiment Station at Sungei Buloh. The third party, of 35 penghulus, proceeded to Malacca where at the Pulau Gadong Rice Station lectures were delivered dealing with the subjects of the various cultural operations, field estimation and measurement, pests and diseases: pure strain padi, method of selection and advantages; the importance of maintaining pure strains: advantages of communal work. Practical work included field demonstrations.

DISTRICT AGRICULTURAL SHOWS.

Kuala Selangor District.

The third Kuala Selangor District Agriculture Show was held on August 4th, 1934 and was opened by His Highness the Sultan of Selangor.

Exhibits in most classes were numerous. Fruit exhibits were few in number, owing to a poor mid-year crop, but of good quality. The vegetable section was the most outstanding feature of the show. Although not numerous, exhibits of coconut products, rubber and poultry were of a very satisfactory standard.

Departmental exhibits were staged by the Health, Co-operative and Agricultural Departments. A number of lectures, illustrated by lantern slides, were delivered on improved methods of copra production and on poultry management by a member of the Department of Agriculture.

Ulu Langat District, Selangor.

The third District Agricultural Show was held at Kajang on August 26th, 1934. The Show was opened by the Hon'ble Mr. F. W. South, Acting Director of Agriculture, S.S. and F.M.S.

The Show was not as successful as on previous occasions, insufficient notice having been given for the preparation of exhibits. With the exception of the Schools and Poultry Sections, exhibits were few in number. The Arts and Needlework and the Poultry Sections were very satisfactory and the exhibits of better quality than on previous occasions.

The Department of Agriculture staged exhibits and an officer of that Department delivered lantern lectures on poultry. The Health Department displayed exhibits concerning sanitation in the *kampong*, scavenging and conservancy, anti-malarial work and prevention of infectious diseases.

Statistical.

MARKET PRICES

August, 1934.

Rubber.—The price of rubber still continued to rise during August, opening at 23⅝ cents per lb. and closing at 25½ cents per lb. for spot loose in Singapore. The average price for the month in Singapore of Smoked Sheet, equal to London Standard was 24.8 cents per lb. as compared with 23.53 cents per lb. in July. The average price in London during August was 7.4 pence per lb. and in New York 15.37 cents gold per lb. as compared with 7.03 pence and 14.51 cents gold respectively in July.

Weekly prices paid during August for small-holders' rubber at three centres are shewn in Table I.

Table I.

Weekly Prices Paid By Local Dealers for Small-Holders' Rubber, August, 1934.

(Dollars per Picul.)

Grades.	Kuala Pilah, Negri Sembilan.					Kuala Kangsar, Perak.				Batu Pahat, Johore.				
	2	9	16	23	30	8	15	22	29	1	8	15	22	29
Smoked sheet		30.35	29.55	30.25	30.00	28.60	29.26	29.21	30.00	25.93			28.16	27.71
Unsmoked sheet	26.74	27.08	26.81	27.35	20.44	25.75	26.20	25.80	26.92	24.85	25.75	26.28	26.74	
Rubber*														
Scrap			15.00				16.52	16.00	14.00					

*Wet unsmoked sheet.

Transport by lorry Kuala Pilah to Seremban 15 cents per picul, to Malacca excluding duty, 25 cents per picul, by rail Seremban to Penang $1.24 per picul, Seremban to Singapore $8.00 per ton.

Transport from Batu Pahat to Singapore by lorry excluding duty, 90 cents per picul.

Transport from Kuala Kangsar to Prai by railway $6.20 per ton.

Transport from Kuala Kangsar to Singapore by railway $10.00 per ton (minimum consignment 5 tons).

At Kuala Pilah the standard deduction for moisture in unsmoked sheet is 5 per cent.

At Kuala Kangsar the standard deduction for moisture in unsmoked sheet is 10 per cent.

Palm Oil.—The market continued to improve steadily during the month and its course is shewn in the following table of the Malayan commodity: basis 5 per cent. f.f.a.

Table II.

DATE 1934.	PALM OIL			KERNELS
	L'Pool/Holland/ Hamburg c. i. f. landed weights in bulk per ton £. s. d.	L'Pool/Continent c. i. f. per ton net in barrels £. s. d.	Halifax (Nova Scotia) c. i. f. landed weights per lb. Cents gold.	Fair Average Malayan Quality c. i. f. Landed Weight per ton on Continent. £. s. d.
August 2	9 12 6	11 12 6	2.20	6 5 0
,, 8	9 17 6	11 17 6	2.25	6 10 0
,, 15	10 10 0	12 15 0	2.35	6 15 0
,, 22	10 15 0	13 0 0	2.60	7 0 0
,, 29	11 0 0	13 10 0	2.75	7 2 6

Copra.—Singapore prices of copra remained relatively stable during August. The sun-dried grade opened at $2.90 per picul and after rising to $3.10 in the early part of the month, eased again to close at $2.95. The average price for the month was $3 per picul as compared with $2.95 in July. The average price for the mixed quality was $2.40 as against $2.49 in July.

Copra cake continued its upward trend during August closing at $1.70 per picul. The average price for the month was $1.43 per picul.

Rice.—The average wholesale prices of rice per picul during July were as follows:—Siam No. 2 (ordinary) $2.78, Rangoon No. 1 $2.77, Saigon No. 1 (long grain) $2.82 as compared with $2.66, $2.50 and $2.60 respectively in June. Corresponding prices in July 1933 were $3.89, $3.06 and $3.52 respectively.

The average retail market prices in cents per gantang of No. 2 Siam rice in June were:—Singapore 22, Penang 24, Malacca 23 as compared with 21, 25 and 23 respectively in June.

The average declared trade value of imports of rice in July was $2.85 per picul as compared with $2.93 in June and $3.10 in May of this year.

Padi.—The price paid for padi at the Government Rice Mill, Bagan Serai, was advanced 25 cents to $1.50 per picul during the month. Padi prices in Kedah increased from $1.25—$1.40 to $1.70—$1.75 per picul during the period under review. A corresponding rise in the price of rice is reported from the latter State.

Tea.—Tanah Rata (Cameron Highlands) tea was quoted in London during July at 1s. 1d. per lb. and Bigia tea was quoted at 1s. 0¼d. and 11¾d. per lb.

Average London prices per lb. for tea consignments from other countries were as follows:—Ceylon 1s. 0.95d., Java 10.83d., Indian Northern 1s. 0.88d., Indian Southern 1s. 0.53d., Sumatra 10.59d. Prices of all grades continued to decline during the month.

Tuba Root (*Derris*).—There was no change during August in the Singapore market of this commodity, prices continuing at the July average of $34.50 per picul for roots sold on the basis of ether extract and $40 per picul for roots sold on rotenone content.

Additional quotations are:—*D. Elliptica* from Johore and the Federated Malay States, $40 to $45 per picul, and the same species from Changi, Singapore, $60 to $70 per picul.

Coffee.—There was little change in the Singapore prices of coffee in August. Sourabaya opened and closed at $20 to $21 per picul according to grade, but weakened during the month to $19 to $20. Palembang coffee improved from $12 per picul to close at $13.60, averaging $13.32 as compared with $13.12 in July.

Local prices for coffee beans ranged, during the month, from $15 to $24 per picul in various parts of the country.

Arecanuts.—Singapore average prices per picul during August were as follows:—Splits $3.85 to $5.09, Sliced $13 to $16.60, Red Whole $5.20 to $6.10, Sourabaya Whole $6 to $7.10, Kelantan Whole $4.20 to $4.59, the price in each range depending upon quality. No prices were quoted for Bila Whole.

The average prices per picul quoted by the Singapore Chamber of Commerce were:—Best $3.98, Medium $3.48, Mixed $3.15.

Gambier.—Singapore prices continued almost unchanged in August, Block remaining steady at $4 per picul and No. 1 Cube easing slightly to $7.25, with an average of $7.31 as compared with $7.38 in July.

Pineapples.—Prices eased slightly during the month, although at the lower prices no business was passing and sellers were anxious to secure orders. August average prices per case were:—Cubes $3.16, Sliced Flat $3.11, Sliced Tall $3.28 as against $3.19, $3.15 and $3.35 respectively in July.

Prices for fresh fruits in Johore were:—First quality $2—$2.40, second quality $1.50—$2, third quality 80 cents to $1 per hundred.

Prices in Singapore were $2.50 and $1.50 per hundred for first and second quality fruit. In Selangor prices ranged from 70 cents to $3 per hundred according to quality.

Tapioca.—Prices in Singapore during August continued at the July level with the exception of Flake Fair which declined still further to average $3.73 per picul as compared with $3.94 in July. The price of Pearl Seed was $5.75 per picul and of Pearl Medium $6 per picul.

Sago.—Singapore prices rose slightly in August, averaging $3.95 per picul for Pearl, Small Fair, and $1.89 for Flour, Sarawak Fair as compared with $3.84 and $1.85 respectively in July.

Mace.—The Singapore market improved considerably during August, the price for Siouw rising to $80 per picul throughout the month, and for Amboina to $54 per picul at the beginning of August. The latter price fell away again, however, to its old level of $50 per picul, giving an average of $51 for the month.

Nutmegs.—Singapore prices remained steady throughout the month at the July closing level of $24 per picul for 110's and $25 per picul for 80's. Average prices for July were $23.25 and $24.25 respectively.

Pepper.—Prices advanced during the month, chiefly owing, it is thought, to buying of a speculative nature. Average prices per picul in Singapore were : —Singapore Black $13.69, Singapore White $36.63, Muntok White $37.69 as compared with July averages of $13.31, $31.63 and $33.12 respectively.

Cloves.—Prices in Singapore continued nominal at Zanzibar $35 and Amboina $45 per picul.

Tobacco : Prices of sun dried leaves ranged, in most parts of the country, from $6 to $60 per picul, according to quality. The price range in Kelantan was from $40 to $45, and in Johore from $40 to $80 per picul.

The above prices are based on London and Singapore daily quotations for rubber; on the Singapore Chamber of Commerce Weekly Reports for the month and on other local sources of information. Palm oil reports are kindly supplied by Messrs. Guthrie & Co. Ltd., Kuala Lumpur; the Singapore prices for coffee and arecanuts by the Lianqui Trading Company of Singapore, and tuba prices by Messrs. Mackay & Co., Singapore.

1 picul = 133⅓ lbs. The Dollar is fixed at two shillings and four pence.

Note.—The Department of Agriculture will be pleased to assist planters in finding a market for agricultural produce. Similar assistance is also offered by the Malayan Information Agency, 57, Charing Cross, London, S.W.1.

GENERAL RICE SUMMARY

July 1934.

Malaya.—Imports of foreign rice into Malaya during July were 55,463 tons, and exports 13,838 tons, net imports accordingly being 41,625 tons. Net imports for the period January to July 1934 were 262,917 tons, an increase of 10.4 per cent. over the corresponding period in 1933.

Of the imports during July, 53 per cent. were consigned to Singapore, 17 per cent. to Penang, 6 per cent. to Malacca, 17 per cent. to the Federated Malay States and 7 per cent. to the Unfederated Malay States. Of the total, 71 per cent. came from Siam, 25 per cent. from Burma, 3 per cent. from French Indo-China and 1 per cent. from other countries.

Of the exports during the month under review, 65 per cent. were shipped to Netherlands India, and 35 per cent. to other countries. The various kinds of rice exported were:—Siam 8,465 tons (61.2 per cent.), Burma 4,298 tons (31 per cent.), French Indo-China 346 tons (2.5 per cent.), India 636 tons (4.6 per cent.) local production 93 tons (0.7 per cent.).

India and Burma.—Foreign exports for the period January to May, 1934 totalled 814,000 tons, a decrease of 14.7 per cent. as compared with exports of 954,000 tons for the corresponding period of 1933.

The total exports of rice and bran from Burma for the six months 1st January to 30th June 1934 were 2,349,799 metric tons as compared with 2,062,703 metric tons for the same period in 1933, an increase of 13.9 per cent.

Siam.—Exports of rice from Bangkok in June were 109,308 tons, giving a total of 849,487 tons for the half year as compared with 828,020 tons for the first six months of 1933.

Japan.—According to the Ministry for Agriculture and Forestry, stocks of rice in Japan Proper on 1st July 1934, totalled 4,975,520 tons, an increase of 1,121,710 tons or 29 per cent. as compared with the corresponding period in 1933.

The supply and demand for the period 1st July to 31st October 1934, is estimated as follows:—

Supply:	Stocks on 1st July	...	4,975,520 tons.
	Imports of Korean rice	...	238,430 ,,
	Imports of Formosan rice	...	280,500 ,,
Demand:	Consumption (July/October)	...	3,178,960 ,,
	Exports	...	21,040 ,,

shewing a surplus of 2,294,450 tons.

It is stated (*Trans Pacific Journal* 26th July, 1934) that most of the 2,103,790 tons of rice held by the Government would deteriorate if the inclement weather continued and that if the weather did not improve in August, the outlook would be serious for this year's crop. In 1911 when similar weather prevailed, there was famine in Akita and Yamagata Prefectures and

as this year the bad weather has covered the greater part of Japan, the situation is considered far more serious than in 1911.

French Indo-China.—Entries of padi into Cholon, January to July 1934 totalled 942,854 metric tons as compared with 771,585 metric tons during the corresponding period of 1933 an increase of 22.2 per cent. Exports of rice for the same period this year were 905,004 metric tons, an increase of 4.6 per cent. as compared with exports of 865,047 metric tons during the corresponding period of 1933.

Netherlands India.—Imports of rice for the period January to May 1934, (*Economic Bulletin* dated 1st August, 1934) amounted to 72,836 metric tons, a decrease of 66 per cent. as compared with the imports during the same period of 1933, totalling 214,420 metric tons.

Ceylon.—The imports for the first seven months of 1934, were 277,911 tons an increase of 9.7 per cent. as compared with 253,370 tons for the corresponding period of 1933. Of the 1934 imports, 14 per cent. were from British India, 64 per cent. from Burma and 22 per cent. from other countries.

Europe and America.—Shipments to Europe from the East were 814,459 tons for the period 1st January to 19th July, 1934, as compared with 834,109 tons for the corresponding period of 1933, a decrease of 2.4 per cent.

Of the 1934 shipments, 41 per cent. were from Burma, 5 per cent. from Japan, 43 per cent. from Saigon, 9 per cent. from Siam, and 2 per cent. from Bengal. The corresponding percentages for 1933, were 52, 3 , 38, 6 and 1 per cent. respectively.

Shipments to the Levant from the East during the period 1st January to 25th June, 1934, were 20,335 tons as compared with 17,121 tons for the same period in 1933, an increase of 18.8 per cent.

Shipments to the West Indies and America for the period 1st January to 24th June. 1934, were 109,550 tons as compared with 83,968 tons during the corresponding period in 1933, an increase of 30.5 per cent.

MALAYAN AGRICULTURAL EXPORTS, JULY, 1934.

PRODUCT.	Net Export in Tons.				
	Year 1933	Jan.-July 1933.	Jan.-July 1934.	July 1933.	July 1934.
Arecanuts ...	20,756	11,921	19,594	1,308	2,344
Coconuts, fresh† ...	100,609†	59,536†	58,227†	10,742†	12,532†
Coconut oil ...	17,568	10,507	14,509	1,064	1,926
Copra ...	110,543	46,626	54,302	7,531	9,475
Gambier, all kinds ...	2,560	1,361	1,239	144	197
Oil cakes ...	9,992	6,531	7,108	518	917
Palm kernels ...	1,983	962	1,664	170	319
Palm oil ...	12,101	4,923	7,388	830	1,159
Pineapples canned ...	59,582	40 358	48,382	7,684	8,825
Rubber§ ...	459,836§	251,402	238,619§	42,655§	31,079§
Sago,—flour ...	7,648	3,317	3,988	1,383	258*
„ —pearl ...	2,646	1,220	2,588	171	465
„ —raw ...	4,420*	2,430*	3,544*	393*	645*
Tapioca,—flake ...	9,881	6,669	4,434	661	320
„ —flour ...	702*	128*	1,255*	13	17*
„ —pearl ...	17,297	9,511	9,382	1,536	1,441
Tuba root ...	569½	270½	348½	39½	51½

† hundreds in number. * net imports. § production.

ACREAGES OF TAPPABLE RUBBER NOT TAPPED ON ESTATES OF 100 ACRES AND OVER, FOR THE MONTH ENDING JULY, 1934.

STATE OR TERRITORY	Acreage of Tappable Rubber end 1933 (*d*)	ESTATES WHICH HAVE ENTIRELY CEASED TAPPING		ESTATES WHICH HAVE PARTLY CEASED TAPPING (*a*)		AREA OF TAPPABLE RUBBER NEVER BEEN TAPPED		Total (3) + (5)	Percentage of (9) to (2)
		Acreage	Percentage of (3) to (2)	Acreage	Percentage of (5) to (2)	Acreage	Percentage of (7) to (2)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
STRAITS SETTLEMENTS :—									
Province Wellesley	44,285	1,127	2.5	8,288	18.7	622	1.4	9,415	21.2
Dindings	7,368	112	1.5	918	12.5	158	2.1	1,030	14.0
Malacca	121,152	1,415	1.2	16,765	13.8	3,271	2.7	18,180	15.0
Penang Island	1,366	318	23.3	311	22.7	145	10.6	629	46.0
Singapore Island	28,842	4,831	16.7	3,927	13.6	716	2.5	8,758	30.3
Total S.S. ...	203,013	7,803	3.8	30,209	14.9	4,912	2.4	38,012	18.7
FEDERATED MALAY STATES :—									
Perak	253,227	4,647	1.8	36,217	14.3	12,132	4.8	40,864	16.1
Selangor	310,003	3,291	1.1	43,525	14.0	12,174	3.9	46,816	15.1
Negri Sembilan	233,592	7,463	3.2	34,897	14.9	19,306	8.3	42,360	18.1
Pahang	46,712	1,747	3.7	12,070	25.8	6,289	13.5	13,817	29.5
Total F.M.S. ...	843,534	17,148	2.0	126,709	15.0	49,901	5.9	143,857	17.0
UNFEDERATED MALAY STATES :—									
Johore	(*b*) 325,747	12,721	3.9	23,559	7.2	22,300	6.8	36,280	11.1
Kedah (*c*)	126,588	4,194	3.3	27,011	21.3	17,429	13.8	31,205	24.6
Kelantan	25,793	4,716	18.3	2,719	10.5	3,941	15.3	7,435	28.8
Trengganu (*c*)	4,543	Nil	Nil	171	3.8	171	3.8	171	3.8
Perlis (*d*)	1,181	Nil	Nil	266	22.5	Nil	Nil	266	22.5
Total U.M.S. ...	483,852	21,631	4.5	53,726	11.1	43,841	9.1	75,357	15.6
TOTAL MALAYA ...	1,530,399	46,582	3.0	210,644	13.8	98,654	6.4	257,226	16.8

Notes :—(*a*) Area out of tapping on Estates which have partly ceased tapping refers to areas definitely being rested and excludes areas on any tapping round.
(*b*) Figures are for end December, 1932.
(*c*) Registered Companies only.
(*d*) Rendered quarterly.
(*e*) Figures are as reported by estate managers.

N.B.—In returns from April, 1934, inclusive, column (7) has been included in columns (3) and (5) and the figures in the above summary for the period January to March inclusive have been amended accordingly.

MALAYA RUBBER STATISTICS — TABLE I

STOCKS, PRODUCTION, IMPORTS AND EXPORTS OF RUBBER, INCLUDING LATEX, CONCENTRATED LATEX AND REVERTEX, FOR THE MONTH OF JUNE, 1934 IN DRY TONS.

State or Territory	Stocks at beginning of month 1			Production by Estates of 100 acres and over		Production by Estates of less than 100 acres estimated 2		Imports				Exports including re-exports				Stocks at end of month		
								during the month		January to May inclusive 1934		during the month		January to May inclusive 1934				
	Ports	Dealer	Estates of 100 acres and over	during the month	January to July inclusive 1934	during the month	January to July inclusive 1934	Foreign	From Malay States & Labuan	Foreign	From Malay States & Labuan	Foreign	Local	Foreign	Local	Ports	Dealers	Estates of 100 acres and over
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
MALAY STATES :—																		
Federated Malay States ...	...	5,133	7,840	13,359	81,647	4,842	61,545	Nil	Nil	Nil	Nil	10,584	1,950	105,849	52,294	...	9,752	8,869
Johore ...	...	1,113	2,416	3,847	25,911	3,645	30,459	Nil	120	Nil	268	1,275	5,671	11,353	47,577	...	1,914	2,281
Kedah ...	...	289	1,674	2,814	19,186	1,348	10,627	Nil	Nil	Nil	Nil	1,620	2,186	10,326	20,000	...	349	1,970
Perlis ...	...	30	13	18	98	40	255	Nil	Nil	Nil	Nil	Nil	50	Nil	345	...	41	10
Kelantan ...	...	130	138	247	1,599	436	4,915	Nil	Nil	319	Nil	79	554	633	6,300	...	150	168
Trengganu ...	...	55	50	282	1,586	141	791	Nil	Nil	Nil	Nil	Nil	423	Nil	2,377		55	50
Total Malay States	...	6,750	12,131	20,567	130,027	10,452	108,592	Nil	120	319	268	13,558	10,834	128,161	128,893	...	12,261	13,348
STRAITS SETTLEMENTS :-																		
Malacca ...	...	1,051	672	1,418	9,330	1,232		Nil		4		2,341		23,735		...	2,260	803
Province Wellesley	...	136	448	598	4,060	202		Nil		Nil						...	1,054	490
Dindings ...	...	42	77	118	755	54	16,325	Nil	11,871	Nil	119,361	7,307	Nil	57,657	Nil	...	26	138
Penang ...	2,990	14,880	7	15	86	64		3,573		16,893						2,854	14,476	13
Singapore ...	7,554	55,149	158	170	1,240	79		19,256		124,304		31,884		196,356		5,070	50,623	128
Total Straits Settlements	10,544	71,258	1,362	2,319	15,471	1,631	16,325	22,829	11,871	141,201	119,361	41,532	Nil	277,748	Nil	7,924	68,439	1,572
TOTAL MALAYA	10,544	78,008	13,493	22,886	145,498	12,083	124,917	22,829	11,991	141,520	119,629	55,090	10,834	405,909	128,893	7,924	80,700	14,920

TABLE II
DEALERS' STOCKS, IN DRY TONS 3

Class of Rubber	Federated Malay States	S'pore	Penang	Province We'sly D'dings M'cca.	Johore	Kedah
20	21	22	23	24	25	26
DRY RUBBER	8,682	41,361	10,783	3,289	1,343	215
WET RUBBER	1,070	9,262	3,693	51	571	134
TOTAL ...	9,752	50,623	14,476	3,340	1,914	349

TABLE III
FOREIGN EXPORTS

PORTS	For month	January to July 1934
Singapore ...	40,108	273,800
Penang ...	10,902	88,468
Port Swettenham.	3,677	39,433
Malacca ...	403	4,208
MALAYA ...	55,090	405,909

TABLE IV
DOMESTIC EXPORTS 4

AREA	For month	January to July 1934
Malay States ...	24,205	243,007
Straits Settlements	3,116	
MALAYA ..	27,321	243,007

Notes:—
1. Stocks on estates of less than 100 acres and stocks in transit on rail, road or local steamer are not ascertained.
2. The production of estates of less than 100 acres is estimated from the formula: Production + Imports + Stocks at beginning of month = Exports + Stocks at end of month, + Consumption, *i.e.*, Column [9] = Columns [15] + [16] + [19] + [20] + [21] + [22] − [4] − [5] − [6] − [7] − [11] − [12]. For the Straits Settlements, Columns [9] figures for Singapore and Penang Islands represent sales or exports as shown by cess paid and for the mainland represent as previously purchases by dealers from local estates of less than 100 acres, reduced by 15 % to terms of dry rubber.
3. Dealers' stocks in the Federated Malay States are reduced to dry weights by the following fixed ratios: unsmoked sheet, 15% wet sheet, 25% scrap, lump, etc., 40%; stocks elsewhere are in dry weights as reported by the dealers themselves.
4. Domestic exports are reported by the Customs Authorities for the Malay States and by the Registrars of Imports and Exports for Province Wellesley, Malacca, Dindings and Labuan. For Singapore and Penang Island domestic exports are represented by sales or exports of rubber as shown by cess paid.

METEOROLOGICAL SUMMARY, MALAYA, JULY, 1934.

Locality.	Air Temperature in degrees Fahrenheit							Earth Temperature		Rainfall								Bright Sunshine.		
	Means of			Absolute Extremes						Total.		Most in a day.	Number of days.					Total.	Daily Mean.	Per cent.
	A. Max.	B. Min.	Mean of A and B.	Highest Max.	Lowest Min.	Lowest Max.	Highest Min.	At 1 foot	At 4 feet			Amt.	Precipitation .01 in or more	Precipitation, .04 in or more	Thunder-storm	Fog morning obs.	Gale force 8 or more			
	°F	°F	°F	°F	°F	°F	°F	°F	°F	in.	mm.	in.								
Railway Hill, Kuala Lumpur, Selangor ...	90.6	71.7	81.1	94	68	85	74	84.2	84.9	4.28	108.7	1.21	15	14	3	2		210.85	6.80	55
Bukit Jeram, Selangor ...	88.3	72.3	80.3	92	70	85	75	83.8	85.6	5.41	137.4	1.43	13	9	2		1	242.50	7.82	63
Sitiawan, Perak ...	90.7	72.8	81.7	94	70	86	75	84.4	85.2	1.55	39.4	0.75	8	3				201.40	6.50	53
Temerloh, Pahang ...	89.6	72.4	81.0	93	70	84	75	85.0	86.0	6.09	154.7	3.99	14	10	1	5		205.60	6.63	54
Kuala Lipis, Pahang ...	88.8	72.1	80.5	92	69	81	74	84.0	84.9	4.84	122.9	2.30	8	7		20		188.35	6.08	49
Kuala Pahang, Pahang ...	87.0	74.4	80.7	90	71	82	77	85.6	86.0	6.55	166.4	1.59	15	14				238.35	7.69	63
Kallang Aerodrome, S'pore ...	86.4	76.5	81.5	90	71	81	80	81.7	82.9	10.19	258.8	2.00	15	13	4			190.85	6.16	
Butterworth, Province Wellesley ...	87.3	74.2	80.8	90	72	84	77	83.7	84.7	6.54	166.1	1.23	14	11	6			168.40	5.45	44
Bukit China, Malacca ...	84.8	73.8	79.3	87	70	79	77	83.1	83.9	9.83	249.7	3.16	10	10	2	1		214.45	6.92	57
Kluang, Johore ...	87.4	70.9	79.1	91	69	81	73	81.4	81.9	3.11	79.0	0.73	20	10		8		172.70	5.57	46
Bukit Lalang, Mersing, Johore	86.6	72.5	79.5	89	71	83	75	81.7	82.0	4.91	124.7	1.00	18	13	1	2		196.30	6.33	52
Alor Star, Kedah ...	87.4	74.2	80.8	92	72	81	77	86.5	86.4	12.36	313.9	2.93	21	16	5	1	2	182.90	5.90	48
Kota Bahru, Kelantan ...	89.2	73.6	81.4	93	71	79	77	84.8	85.2	8.57	217.7	2.59	14	12	4			218.35	7.04	57
Kuala Trengganu, Trengganu	88.5	73.4	80.9	91	70	79	75	83.7	84.8	6.30	160.0	3.51	15	10	3	1		221.10	7.13	57
HILL STATIONS.																				
Fraser's Hill, Pahang 4268 ft. Pahang ...	74.2	62.5	68.3	78	60	69	64	71.3	71.9	3.61	91.7	1.49	12	10	2	3	1	181.95	5.87	48
Cameron Highlands, Tanah Rata, Pahang 4750 ft. ...	72.5	55.6	64.1	76	48	69	62	70.1	69.7	3.49	88.7	1.17	15	10	1			130.10	4.20	34
Cameron Highlands, Rhododendron Hill, Pahang 5120 ft. ...	71.7	59.4	65.5	75	55	68	61			4.02	102.1	1.41	16	9				138.70	4.47	36

Compiled from Returns supplied by the Meteorological Branch, Malaya.